

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
19 July 2001 (19.07.2001)

PCT

(10) International Publication Number
WO 01/51386 A1

(51) International Patent Classification⁷: B65D 81/36, 1/42

(21) International Application Number: PCT/HR00/00001

(22) International Filing Date: 4 February 2000 (04.02.2000)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

P20000021A

14 January 2000 (14.01.2000)

HR

DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant and

(72) Inventor: RABATIĆ, Mišo, Georg [HR/HR]; Maksimirska 71/8, 10000 Zagreb (HR).

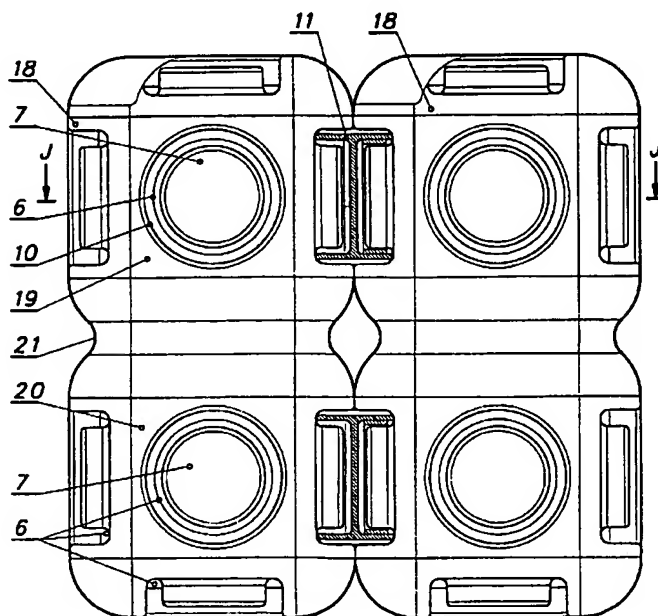
Published:

— with international search report

(81) Designated States (*national*): AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK,

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: MODULAR INTERCONNECTABLE CONTAINER



(57) Abstract: Containers made of plastic materials, suitable for the storage and transportation of liquid particularly in the nourishment domain, and which consist of the containers and closures. The containers serve also as universal building elements, which are connected by coupling elements, i.e. closures, into new three-dimensional structures. In such a way, the containers themselves can be kept, collected and, for example, used for playing. They will not be disposed daily into refuse, but will be disposed of more rarely in order to enable their recycling.

WO 01/51386 A1

MODULAR INTERCONNECTABLE CONTAINER

DESCRIPTION

Field of technique

The field of technique which incorporates the invention itself can be classified as B 65 D, i.e. under the containers for storage and transport of articles and materials. As the invention title itself comprises the liquid, it is clear that the invention serves firstly as the container for liquids, with an additional using quality.

Technical problem

Confronted with the fact, that the containers for liquids are daily produced and thrown away in enormous quantities, and that some of them have no using quality after being emptied and the construction of the same ones aggravates the disposal and recycling, the idea has appeared by which to the containers, after their basic use, another using quality is added.

The former liquid packaging ways, particularly in the food industry, for example standard so-called PET, tetrapack, bottles, tins and other similar containers, posses the main drawback - after being emptied, they are most frequently been thrown away into the refuse. The ecological standards of the developed countries "drive" the users of the used containers to dispose the same one additionally into special disposal places assigned for that purpose, in order that they could be recycled. The used containers are disposed individually or in smaller quantities, and, alone for themselves, they are of no interest to the consumer, but an additional worry.

By this invention just these drawbacks are eliminated, to the container form itself, on its surface, parts are added, which enable the connecting of two or more container pieces together in a way, that three-dimensional structures can be created. This said spatial structures, like for example the one in Figure 57, sheet 24, enable a simpler transport, storage, as well as also the playing and amusement for children. Such greater quantity, once gathered together, "justifies" the transport to even more distanced disposal places, because additional plastic containers - sacs and alike, for taking away the empty bottles, are not necessary. Simply, the entire block of empty bottles is very monolithic, light and simple for transportation.

State of art

To the inventor the wide palette of products – containers as containers for liquids, especially in the nourishment domain, is known. For example, the wide-spread so-called PET containers, tetrapacks, tins and similar containers for liquids, which in themselves have no possibility of an additional use after being emptied.

Invention essence

The invention in its essence consists of the container construction, which on its sides has sunk connecting places shaped to accept the closer as the connecting element. The closer is pressed-in into the connecting place of both containers, like it is presented in Figures 29 and 30, sheet 10. In order to ensure a compact coupling by the closer, the closer outer diameter is greater than the diameter of the connecting place in the container sunkage and is toothed with small elastic teeth which enable the necessary deformation. By this closer deformation also the technological errors of the distance between the connecting places on the containers at the container industrial production are annulated. In addition, the closer is constructed in a way, that in the middle it has a partition wall and at one or at both sides a thread, as it is presented in Figures 12 and 13, sheet 4, as well as in 16 and 17, sheet 5.

Measure “a” defines the dimension of the side of container basic shape – the cube, as well as the distance between the centres of the connecting places on the containers, in order to ensure the compatibility at their inter-connecting, regardless of the size and shape of all containers which result from this invention. Only the container types, like the one-part container with double acceptance (52) presented in sheet 30, are with the side dimension “1,5a”.

By this invention also the firm joint of the two containers by means of the closer with the double thread is enabled, as it is presented in Figure 56, sheet 23, and in Figures 66 and 67, sheet 27.

The proposed technical solution offers an additional using quality of the used containers. The invention novelty is, that it combines the existing advantages of the plastic containers with the special construction of the container and the belonging closer. After the use, the container becomes a three-dimensional building element – body, and the closer the universal coupling element of the same ones. In such a way, the containers themselves can be simpler kept, gathered together or, for example, used in the game.

Description of Figures

The positions on all Figures are identical and denote:

- (1) basic container
- (2) container neck
- (3) neck opening
- (4) neck thread
- (5) tearing element of the closer safety ring
- (6) sunk connecting place
- (7) bulginess on the connecting place
- (8) presentation of the protection sign example
- (9) triangular sunk surface
- (10) cylindrical surface for the acceptance of the closer outer surface
- (11) closer
- (12) closer partition wall
- (13) closer outer toothing
- (14) closer safety ring
- (15) cylindrical sunkage of the closer upper part
- (16) thread of the closer lower part
- (17) thread of the closer upper part
- (18) two-part container
- (19) upper part of the two-part container
- (20) lower part of the two-part container
- (21) partition channel
- (22) three-part container
- (23) upper part of the three-part container
- (24) middle part of the three-part container
- (25) lower part of the three-part container
- (26) six-part container
- (27) upper left part of the six-part container
- (28) middle left part of the six-part container
- (29) lower left part of the six-part container
- (30) upper right part of the six-part container
- (31) middle right part of the six-part container
- (32) lower right part of the six-part container
- (33) recess on the six-part container

- (34) partition wall in the recess of the six-part container
- (35) curved container
- (36) upper part of the curved container
- (37) lower part of the curved container
- (38) middle part of the curved container
- (39) round container
- (40) upper part of the round container
- (41) lower part of the round container
- (42) channel on the lower part of the round container
- (43) sunk bottom of the round container
- (44) triangular container
- (45) cylindrical container - basic
- (46) upper part of the cylindrical container
- (47) lower part of the cylindrical container
- (48) threaded bulginess on the connecting place
- (49) one-part cylindrical container with the double acceptance
- (50) connecting place with the double acceptance
- (51) two-part cylindrical container with the double acceptance
- (52) one part container with the double acceptances

Figure 1, sheet 1

The three-dimensional basic shape of container (1) with indicated positions (2), (3), (4), (5), (6), (7), (8) and (9) is presented.

Figure 2, sheet 2

The basic shape front-view of container (1) with indicated positions (2), (4), (5), (6), (7), with closer (11) pressed-in into the upper surface as well as with the marks of cross-section A-A is presented.

Figure 3, sheet 2

The top-view of Figure 2 with indicated positions (1), (2), (3), (4), (9), with closer (11) pressed-in into the upper surface as well as with the mark of view A is presented. On closer (11) the closer outer toothing (13) is presented.

Figure 4, sheet 2

The cross-section A-A of Figure 2 with indicated positions (1), (2), (6), (7) and (10) is presented.

Figure 5, sheet 2

View A of Figure 3 rotated for 45° , with indicated positions (1), (4), (5), (6), (7) and (10) as well as with closer (11) pressed-in into the upper surface, is presented.

Figure 6, sheet 2

The top-view of Figure 5 with indicated positions (1), (2), (4), (5), (6) (7), with closer (11) pressed-in into the upper surface, as well as with the marks of cross-section B-B is presented. On closer (11) the closer outer toothing (13) is presented.

Figure 7, sheet 2

Cross section B-B of Figure 6 with indicated positions (1), (2), (3), (6), (7) and (10) as well as with closer (11) pressed-in into the upper surface is presented.

Figure 8, sheet 3

The basic shape front view of container (1) with indicated positions (6), (7) and (10), with closer (11) on neck (2) as well as with the mark of view B is presented. On closer (11) there is closer safety ring (14).

Figure 9, sheet 3

The top-view of Figure 8 with indicated positions (1), (7), (9), with closer (11) on neck (2) as well as with the mark of cross-section C-C is presented. On closer (11) the closer outer toothing (13) is presented.

Figure 10, sheet 3

View B of Figure 8 with indicated positions (1), (6), (7), (10), with closer (11) on neck (2) is presented. On closer (11) closer safety ring (14) is presented.

Figure 11, sheet 3

Cross-section C-C of Figure 9 with indicated positions (1), (2), (4), (5), (9), with closer (11) screwed on neck (2) is presented. On closer (11) closer outer toothing (13) and closer safety ring (14) are presented.

Figure 12, sheet 4

Closer (11) with indicated positions (8), (12), (13) and (17) is presented three-dimensionally.

Figure 13, sheet 4

Closer (11) with indicated positions (8), (12), (13) and (15) is presented three-dimensionally.

Figure 14, sheet 5

The front-view of closer (11) with closer safety ring (14) is presented

Figure 15, sheet 5

The top-view of closer (11) with indicated positions (12) and (13), with the marks of cross-sections D-D and E-E as well as with the marked and presented detail A is presented.

Figure 16, sheet 5

Cross-section D-D of Figure 15 with indicated positions (12), (13), (14), (15) and (16) as well as with the marked and presented details B and C is presented.

Figure 17, sheet 5

Cross-section E-E of Figure 15 with indicated positions (12), (13), (14), (16) and (17) as well as with the marked and presented details D and E is presented.

Figure 18, sheet 6

Two-part container (18) with indicated positions (2), (3), (4), (5), (6), (7), (8), (9), (19), (20) and (21) is presented.

Figure 19, sheet 7

The front-view of two-part container (18) with indicated positions (2), (4), (5), (6), (7), (19), (20) and (21) as well as with marks of cross-sections G-G and H-H is presented.

Figure 20, sheet 7

The top-view of Figure 19 with indicated positions (2), (3), (4), (6), (7), (9) and (18) as well as with the marks of cross-section F-F and view C is presented.

Figure 21, sheet 7

View C of Figure 20 rotated for 45° , with indicated positions (4), (5), (6), (7), (10), (19), (20) and (21) as well as with closer (11) pressed-in into the upper surface, is presented.

Figure 22, sheet 7

The top-view of Figure 21, with indicated positions (2), (3), (9), (19), as well as with closer (11) pressed-in into the upper surface, is presented. On closer (11) closer outer toothing (13) is presented.

Figure 23, sheet 8

The front-view of two-part container (18), with indicated positions (6), (7), (10), (19), (20) and (21), with closer (11) on neck (2) as well as with the marks of cross-section G-G and H-H is presented. On closer (11) there is closer safety ring (14).

Figure 24, sheet 8

Cross-section F – F of Figure 20 with indicated positions (6), (7), (10), (18), (19), (20) and (21) is presented.

Figure 25, sheet 8

Cross-section G – G of Figure 23 with indicated positions (6), (7), (10), (18) and (21) is presented.

Figure 26, sheet 8

Cross-section H – H with indicated positions (6), (7), (10) and (18) is presented.

Figure 27, sheet 9

The cross-section of two two-part containers (18) with indicated positions (6), (7), (10), (19), (20) and (21), with two closers (11) pressed-in into the connecting places of the lateral sides in the moment before the container connecting as well as with the marks of cross-section I – I is presented.

Figure 28, sheet 9

Cross-section I – I of Figure 27 with indicated positions (6), (7), (10), (11), (19), (20) and (21) is presented.

Figure 29, sheet 10

The cross-section of two two-part containers (18) with indicated positions (6), (7), (10), (19), (20) and (21), with two closers (11) pressed-in into the connecting places of the lateral sides of the connected containers as well as with the marks of cross-section J – J is presented.

Figure 30, sheet 10

Cross-section J – J of Figure 29 with indicated positions (11), (18) is presented.

Figure 31, sheet 11

Three-part container (22) with indicated positions (6), (7), (8), (9), (21), (23), (24) and (25) as well as with closer (11) on neck (2) is presented.

Figure 32, sheet 12

The front-view of three-part container (22) with indicated positions (6), (7), (21), (23), (24) and (25), with closer (11) on neck (2) as well as with the marks of cross-sections K – K and L – L and of view D is presented. On closer (11) there is closer safety ring (14).

Figure 33, sheet 12

View D of Figure 32 with indicated positions (7), (9) and (22), with closer (11) on neck (2) as well as with the marks of cross-sections M – M and N – N and view E is presented. On closer (11) closer outer toothing (13) is presented.

Figure 34, sheet 12

Cross-section K – K of Figure 32 with indicated positions (6), (7), (10), (21) and (22) is presented.

Figure 35, sheet 12

Cross-section L – L of Figure 32 with indicated positions (6), (7), (10) and (22) is presented.

Figure 36, sheet 13

View E of Figure 33 with indicated positions (6), (7), (10), (21), (22), (23), (24) and (25) as well with closer (11) on neck (2) is presented.

Figure 37, sheet 13

Cross-section M – M of Figure 33 with indicated positions (6), (7), (10), (21), (23), (24) and (25) is presented.

Figure 38, sheet 13

Cross-section N – N of Figure 33 with indicated positions (2), (4), (5), (9), (11), (13), (14) and (22) is presented.

Figure 39, sheet 14

Three-dimensional six-part container (26) with indicated positions (2), (6), (7), (8), (21), (27), (28), (29), (30), (31), (32) and (33) is presented.

Figure 40, sheet 15

The front-view of six-part container (26) with indicated positions (2), (4), (5), (6), (7), (10), (21), (27), (28), (29), (30), (31), (32) and (33) as well with the marks of cross-section O – O and P – P and views F and G is presented.

Figure 41, sheet 16

View F of Figure 40 with indicated positions (6), (7), (10), (21), (26), (27), (28) and (29) as well with closer (11) on neck (2) is presented. On closer (11) there is closer safety ring (14)

Figure 42, sheet 16

Cross-section O – O of Figure 40 with indicated positions (6), (7), (10), (21), (30), (31), (32), (33) and (34) as well as with the mark of detail F is presented.

Figure 43, sheet 16

Detail F of Figure 42 with indicated positions (33) and (34) is presented.

Figure 44, sheet 17

View G of Figure 40 with indicated positions (2), (3), (4), (6), (7), (9), (10), (26), (27) and (30) as well as with the mark of cross-section R – R is presented.

Figure 45, sheet 17

Cross-section P – P of Figure 40 with indicated positions (6), (7), (21), (26), (29) and (32) is presented

Figure 46, sheet 17

Cross-section R – R of Figure 44 with indicated positions (2), (3), (4), (5), (9) and (26) is presented.

Figure 47, sheet 18

Three-dimensional curved container (35) with indicated positions (2), (3), (4), (5), (6), (7), (8), (36) and (37) is presented.

Figure 48, sheet 19

The front-view of curved container (35) with indicated positions (2), (4), (5), (6), (7), (10), (36), (37) and (38) as well as with the mark of cross-section S – S is presented.

Figure 49, sheet 19

Cross-section S – S of Figure 48 with indicated positions (6), (7), (10) and (35) is presented.

Figure 50, sheet 20

Round container (39) with indicated positions (2), (4), (5), (40), (41) and (42) is presented.

Figure 51, sheet 21

The front-view of round container (39) with indicated positions (2), (4), (5), (40), (41) and (42) as well as with the mark of view H is presented.

Figure 52, sheet 21

The top-view of round container (39) with indicated positions (2), (3), (4) as well as with the mark of cross-section T – T is presented.

Figure 53, sheet 22

Detail G of Figure 54 with indicated positions (2), (3), (4), (5), (11), (12), (13), (14), (17) and (39) is presented.

Figure 54, sheet 22

Cross-section T – T of Figure 52 with indicated positions (6), (7), (10), (39), (40), (41), (42) and (43) as well as with the mark of detail G is presented.

Figure 55, sheet 22

View H of Figure 51 with indicated positions (6), (7), (10), (39) and (43) is presented.

Figure 56, sheet 23

Two round containers (39), connected by closer (11) with the double thread presented in Figures 12 and 17, are presented three-dimensionally.

Figure 57, sheet 24

The spatial structure composed of basic forms of container (1), two-part containers (18) and three-part container (22) is presented three-dimensionally.

Figure 58, sheet 25

The front view of triangular container (44) with indicated positions (2), (4), (5), (6), (7) and (10) is presented.

Figure 59, sheet 25

The top-view of triangular container (44) with indicated positions (2), (3), (4), (6), (7) and (9) as well as with the marks of cross-sections U-U and view I is presented.

Figure 60, sheet 25

View I of Figure 59 with indicated positions (6), (7), (10) and (44) is presented.

Figure 61, sheet 25

Cross-section U-U of Figure 59 with indicated positions (2), (3), (6), (7), (10) and (44) is presented.

Figure 62, sheet 26

The front-view of basic cylindrical container (45) with indicated positions (2), (4), (5), (21), (46) and (47) is presented.

Figure 63, sheet 26

The top-view of Figure 62 with indicated positions (2), (3), (4) and (45) is presented.

Figure 64, sheet 26

The longitudinal section of basic cylindrical container (45) with indicated positions (2), (3), (4), (6), (10), (21), (46), (47) and (48) as well as of closer (11) with indicated positions (12), (14), (16) and (17) on neck (2) is presented.

Figure 65, sheet 26

The top-view of Figure 64 with indicated positions (11), (12), (13) and (45) is presented.

Figure 66, sheet 27

The front-view of two, by closer (11) connected basic cylindrical containers (45) with the indicated positions (21), (45), (46) and (47) is presented.

Figure 67, sheet 27

The longitudinal section of Figure 66 with indicated positions (2), (3), (4), (10), (11), (12), (13), (14), (16), (17), (21), (45), (46), (47) and (48) is presented.

Figure 68, sheet 28

The front-view of two-part cylindrical container with double acceptance (51) with indicated positions (2), (4) and (21) is presented.

Figure 69, sheet 28

The top-view of Figure 64 with indicated positions (2), (3), (4) and (51) is presented.

Figure 70, sheet 28

The longitudinal section of two-part cylindrical container with double acceptance (51) with indicated positions (2), (3), (4), (6), (10), (21), and (50), as well as of closer (11) on neck (2) is presented.

Figure 71, sheet 28

The longitudinal section of one-part cylindrical container with double acceptance (49) with indicated positions (2), (3), (4), (6), (10) and (50) as well as of closer (11) on neck (2) is presented.

Figure 72, sheet 29

The longitudinal section of the coupling of the two-part cylindrical container with double acceptance (51) and of one-part cylindrical container with double acceptance (49) with indicated positions (2), (3), (4), (6), (7), (10), (21) and (50), as well as of closer (11) on necks (2) is presented.

Figure 73, sheet 29

The longitudinal section of the coupling of one-part cylindrical container with double acceptance (49) with indicated positions (2), (3), (4), (6), (10) and (50), of two-part container (18) with indicated positions (6), (7), (10), (19), (20) and (21), as well as of bigger closer (11) on neck (2) and smaller closer (11) in the upper connecting place of the two-part container and the smaller diameter of double connecting place (50) is presented.

Figure 74, sheet 30

The front-view of one-part container with double acceptances (52) with indicated positions (2), (4) and (50) is presented.

Figure 75, sheet 30

The top-view of Figure 74 with indicated positions (2), (4), (50) and (52) is presented.

Figure 76, sheet 30

The longitudinal section of one-part container with double acceptances (52) with indicated positions (2), (3), (4) and (50) is presented.

Figure 77, sheet 30

The longitudinal section of one-part container with double acceptances (52) with indicated positions (2), (3), and (50) as well as of closer (11) on neck (2) is presented.

Figure 78, sheet 31

The longitudinal section of the coupling of three one-part containers with double acceptance (52) with indicated positions (2), (3), (4), (7), (10) and (50), with four basic containers (1) with indicated positions

(6), (7) and (10), connected by closer (11) with indicated positions (12) and (13) is presented.

Example of the invention realisation

The example of the invention realisation should be understood in a way, that the proposed technical solution is universal, and that the existing realisation presented in the Figures does not limitate the use defined by the patent claims in any way.

Sheet 1

The basic form of the container (1), which is basically a cube of rounded edges, is presented three-dimensionally. On all cube surfaces there are sunk connecting places (6), assigned to accept closer (15). On the upper surface there is triangular sunk surface (9), on which outer corner there is neck (2). The top of the neck is in the level of the upper surface. On neck (2) there is outer thread (4) and tearing element (5) of the closer safety ring. From the bottom of connecting place (6) rises bulginess (7), on which protection seal (8) is pressed-in.

Sheet 2

In Figures 2 to 7 views and cross-sections of the basic form of container (1) are presented, where closer (11) is not on neck (2) but pressed-in into sunk connecting place (6) on the upper surface. Closer (11) lies with outer toothing (13) on cylindrical surface (10) as well as on a part of neck (2), where it is made without thread (4) and without tearing element (5) of the closer safety ring. This container has 6 sunk connecting places (6). Measure "a" defines the dimension of the side of the container basic form the cube.

Sheet 3

In Figures 8 to 11 the views and cross-sections of the basic form of container (1), which is not opened yet, are presented - closer (11) is on neck (2), closer safety ring (14) is still a composing part of closer (11). The aim of safety (tearing off) ring (14) is identical to the already existing systems in use and is related to that kind of guaranty to the consumer, that the container contents is untouched.

Sheet 4

In Figure 12 closer (11), which has thread (17) on the upper part, is presented, and in Figure 13 the three-dimensionally presented closer (11) has on the upper part cylindrical sunkage (15). On partition wall (12) at the upper side protection seal (8) is

pressed-in, while outer closer toothing (13) can be seen from outside. Closer safety ring (14) is already torn off.

Sheet 5

In Figure 14 to 17 the views, cross-sections and details of closer (11) are presented. On detail A closer outer toothing (13) is enlarged, from the closer top-view in Figure 15. On detail B a part of closer upper part cylindrical sunkage (15) of cross-section D-D of closer (11) is enlarged, on detail D a part of closer upper part thread (17) of cross-section E-E of closer (11) is enlarged. On details C and D closer lower part threads (16) of cross-section D-D and E-E of closer (11) are enlarged. Closer safety ring (14) is still on closer (11).

Sheet 6

Two-part container (18) is presented, where upper part (19) is as the basic form of container (1) but without the bottom, and lower part (20) is as the basic form of container (1) but without the upper surface. The connection of upper (19) and lower part (20) is partition channel (21).

Sheet 7

In Figures 19 and 20 the views of two-part container (18) without closer (11), and on Figures 21 and 22 the views with closer (11) are presented, where closer (11) is not on neck (2) but pressed-in into sunk connecting place (6) on the upper surface. Closer (11) leans with outer toothing (13) on cylindrical surface (10) as well as on a part of neck (2), where it is made without thread (4) and without tearing element (5) of the closer safety ring. Measure "a" defines the dimensions of the sides of the container basic form – the cube as well as the distance between the centres of sunk connecting places (6) on the lateral sides, and measure "2a" is the height of the two-part container (18).

Sheet 8

In Figure 23 to 26 the views and cross-sections of two-part container (18) are presented. On view (Figure 23) there is two-part container (18) which is not opened yet – closer (11) is on neck (2), closer safety ring (14) is still the composing part of closer (11). This container has 10 sunk connecting places (6).

Sheet 9

In Figures 27 and 28 the cross-sections of two two-part containers (18) with two closers (11), inserted into sunk connecting places (6) of the lateral sides in the moment just before connecting the containers, are presented.

Sheet 10

In Figures 29 and 30 the cross-sections of two two-part containers (18) with two closers (11), inserted into sunk connecting places (6) of the lateral sides and in such a way connected in one whole, are presented.

Sheet 11

Three-part container (22) is presented, where upper part (23) is as the upper part of two-part container (18), lower part (25) as the lower part of two-part container (18), and the middle part as the basic form of container (1) without the upper and lower surface. The connection of the upper (23) and middle part (24), as well as of middle part (24) and lower part (25) is partition channel (21). Closer (11) is placed on neck (2).

Sheet 12

In Figures 32 to 35 the views and cross sections of three-part container (22) are presented. On the view (Figure 32) there is three-part container (22) which is not opened yet – closer (11) is on neck (2), closer safety ring (14) is still the composing part of closer (11). This container has 14 sunk connecting places (6). Measure “a” defines the dimensions of the sides of the container basic form – the cube as well as the distance between the centres of sunk connecting places (6) on the lateral sides, and the measure “3a” is the height of three-part container (22).

Sheet 13

In Figure 36 to 38 the views and cross-sections of three-part container (22) are presented. On view E (Figure 36) and cross-section N – N (Figure 38) there is three-part container (22) which is not yet opened – closer (11) is on neck (2), closer safety ring (14) is still the composing part of closer (11).

Sheet 14

Six-part container (26), when the left side is as three-part container (22) without the right side, and the right side as three-part container (22) without the left side, and with the upper surface as if it is the lower surface, is presented. The connection between the single parts are partition channels (21). On the joining places of 4 partition channels there are recesses (33).

Sheet 15

The front-view of six-part container (26) is presented. Measure “a” defines the dimensions of the side of the container basic form – the cube as well as the distance between the centres of sunk connecting places (6) on lateral sides, and measure “3a” is the height of the three-part container (22). Measure “a/2” is the distance from the centre of sunk connecting place (6) to the container side.

Sheet 16

In Figure 41 to 43 six-part container (26) is presented, where on view F (Figure 41) it is still unopened – closer (11) is on neck (2), closer safety ring (14) is still the composing part of closer (11). On cross-section O – O (Figure 42) and on detail F (Figure 43) recesses (33) and partition wall (34), which stiffen the sides with 6 sunk connecting places (6) each, are presented. This container has 22 sunk connecting places (6).

Sheet 17

In Figures 44 to 46 the view and the cross-sections of six-part container (26) are presented. On cross-section R – R there is container neck (2) with thread (4), tearing element (5) of the closer safety ring. Measure “a” defines the dimensions of the sides of the container basic form – the cube as well as the distance between the centres of sunk connecting places (6) on lateral sides, and measure “2a” is the width of three-part container (22).

Sheet 18

Curved container (35) is presented three-dimensionally, where the upper part of curved container (36) is at a certain inclination with respect to the lower part of curved container (37), and they are identical to upper (19) and lower (20) part of two-part container (18), but between them there is no partition channel.

Sheet 19

In Figures 48 and 49 the front-view and the cross-section of curved container (35) are presented, where between upper (36) and lower (37) part of the curved container the container middle part (38), which gives to it such a curved form, can be seen.

Sheet 20

Round container (39), where on the top and in the centre of the upper part of round container (40) there is neck (2) with thread (4), is presented. Upper part (40) widens towards the lower part of round container (41), on which there are two channels (42).

Sheet 21

In Figures 51 and 52 the views of round container (39) are presented, where it can be seen that the same one is a rotational body.

Sheet 22

In Figures 53 to 55 the views, the cross-section and the detail of round container (39) are presented. On neck (2) of round container (39) there is closer (11) with the thread of closer upper part (17), and closer safety ring (14) is still the composing part of closer (11), what means that the container is not being opened. On sunk bottom (43) the regularly distributed 5 sunk connecting places (6) can be seen. The distance between the adjoining outer sunk connecting places (6) corresponds to the distance

between the same one on other containers, in such a way this container is also compatible with them. In addition, this container can be also connected via central sunk connecting place (6) and via neck (2).

Sheet 23

Two round containers (39), connected together via the neck by closer (11) with the thread in closer upper (17) and lower (16) part, are presented three-dimensionally. This is one example of coupling which when filled with water, sand or a similar material can be used for physical exercise.

Sheet 24

One of the first assemblies, realised in this example with several basic forms of container (1), of two-part containers (18), and of three-part container (22), is presented. They cannot be seen, but closers (11), which keep this assembly via sunk connecting places (6) together, are built-in.

Sheet 25

In Figures 58 to 61 the views and the cross-section of triangular container (44), which on each of three lateral sides has two, and on the upper and lower surface one sunk connecting place (6) each – 8 altogether, are presented. The dimension of the greatest width is "a" while the height is "2a".

Sheet 26

In Figures 62 to 64 the views and the cross-section of basic cylindrical container (44), which diameter is "a" and height "2a", are presented. On the bottom threaded bulginess (48) on the connecting place is visible.

Sheet 27

In Figures 66 and 67 the front-view and the cross-section of two-coupled cylindrical containers (45) are presented, where the coupling is performed by screwing-in closer (11) with the thread of the closer upper part (17) onto threaded bulginess (48) on the connecting place.

Sheet 28

In Figures 68 to 71 the views and the cross-section of the two-part cylindrical container with double acceptance (51) are presented, where in the cross section (Figure 70) closer (11) on neck (2) is added. The dimension of the container diameter is " $\varnothing a$ ", while the height is "2a". In Figure 71 the cross-section of one-part cylindrical container (49) with double acceptance (49) and closer (11) on neck (2) is presented, which diameter dimension is " $\varnothing a$ ", while the height is "a". At these container types closer (11) has not safety ring (14), and the guaranty to the consumer, that the container contents is being untouched, is ensured by the foil glued onto the top of neck (2), what is identical to the already existing systems in use.

Sheet 29

In Figure 72 the example of connecting the one-part cylindrical container with double acceptance (49) and the two-part cylindrical container with double acceptance (51) is presented in the cross – section. The connecting is performed with closer (11), which is placed on neck (2) of container (49) and is pressed-in into double connecting place (50), on its greater diameter, of container (51). In Figure 73 the example of connecting two-part container (18) and one-part cylindrical container with double acceptance (49) is presented in the cross-section. The connecting is performed with closer (11), which is pressed-in into the upper connecting place of two-part container (18) and into double connecting place (50), on its smaller diameter, of container (49).

Sheet 30

In Figures 74 to 77 the views and the cross-sections of one-part container with double acceptances (52) are presented, where in the cross-section in Figure 77 closer (11) on neck (2) is added. This container has 5 sunk connecting places with double acceptance (50). Measure “1.5a” defines the dimensions of sides and the height to the middle of the thickness of closer partition wall (12).

Sheet 31

In Figure 78 the example of connecting three one-part containers with double acceptances (52) and four basic containers (1) is presented in the cross-section. The inter-connecting of containers (52) is performed by bigger closers (11) belonging to them, which are on necks (2) and are pressed-in into double connecting places (50), on their greater diameter. The inter-connecting of containers (1) is performed by closers (11) which are pressed-in into lateral connecting places (6). The connecting of the group of one-part containers with double acceptance (52) and of the group of basic containers is performed by the closers pressed-in into lateral connecting places (6) of container (1) and into double connecting places (50), on their smaller diameter, of container (52). From the Figure it can be seen, that the dimension of the distance between the upper and lower place of connecting the container groups is “3a”.

The containers of square or rectangular top-view, and this are basic container (1), two-part container (18), three-part container (22), six-part container (26) as well as also the not presented multi-part containers, when put together after the filling into the cardboard boxes, take less space than the classical round containers of the same volume. The placement of neck (2) at the sides on the same containers makes the liquid emptying easier.

Industrial applicability of the invention

The industrial applicability of the invention in the broadest sense is polysemantic:

- a) The containers for the liquid, which posses an additional using quality and which can easily be produced of various materials, suitable for blowing in moulds, assigned for that purpose, from adequate test tubes or "visceras", have the potentially broad application in the nourishment industry and beverage distribution.
- b) The containers, by the additional using quality which results from the unique construction of the containers themselves and of the closers belonging to them, can be used as a didactic and creative accessory.
- c) It results from the said above, that the containers concieved in such a way will not be disposed daily into the refuse, but will be disposed more rarely but in greater quantity onto special disposal locations in order to enable their recycling, what means that the environmental pollution will be significantly less.

PATENT CLAIMS

1. The containers made of various materials suitable for blowing in moulds, assigned for that purpose, from adequate test tubes or "visceras", with the basic assignment of the storage and transportation of liquids particularly in the nourishment domain, and which consist of the containers, closers and their belonging parts, **characterized by**, that the containers, such as (1), (18), (22), (26), (35), (39), (44), (45), (49), (51) and (52), are three-dimensional building elements of special surface topology, and closers (11), with the compatible arbitrary thread, are universal connecting elements for the inter-connecting of containers, either only by pressing them in into connecting places (6) and (50) on the container bodies or only by screwing them on two necks (2), by screwing them on neck (2) and on threaded bulginess on the connecting place (48) as well as by screwing them on neck (2) with the pressing-in into other connecting place (6) or (50).
- 2.) The containers according to patent claims 1, **characterized by**, that on the container surfaces there are either sunk connecting places (6) with cylindrical surface (10) for the acceptance of outer toothing (13) of closer (11) with bulginess (7) or threaded bulginess (48) or connecting places with double acceptance (50) with two cylindrical surfaces (10) of greater and smaller diameter, for the acceptance of outer toothing (13) of bigger or smaller closer (11), and with bulginess (7).
- 3.) The closers according to patent claim 1, **characterized by**, that for achieving a compact coupling their outer diameter is greater than the diameter of connecting place (6) or of connecting place with double acceptance (50) of the containers described in patent claims 1 and 2, and that it is toothed with elastic tiny toothing (13), which enables the necessary deformation during the pressing-in into the connecting place, but also the annulation of the technological errors of the distance between the connecting places on the containers, which could appear at the containers industrial production.
- 4.) The closers according to patent claim 1 and 3, **characterized by**, that they have partition wall (12), where at one side there is the thread of closer lower part (16), and at the other side there is either cylindrical sunkage (15) or the thread of closer upper part (17), which enables the coupling by screwing them on two necks (2), or on neck (2) and on the threaded bulginess on connecting place (48).

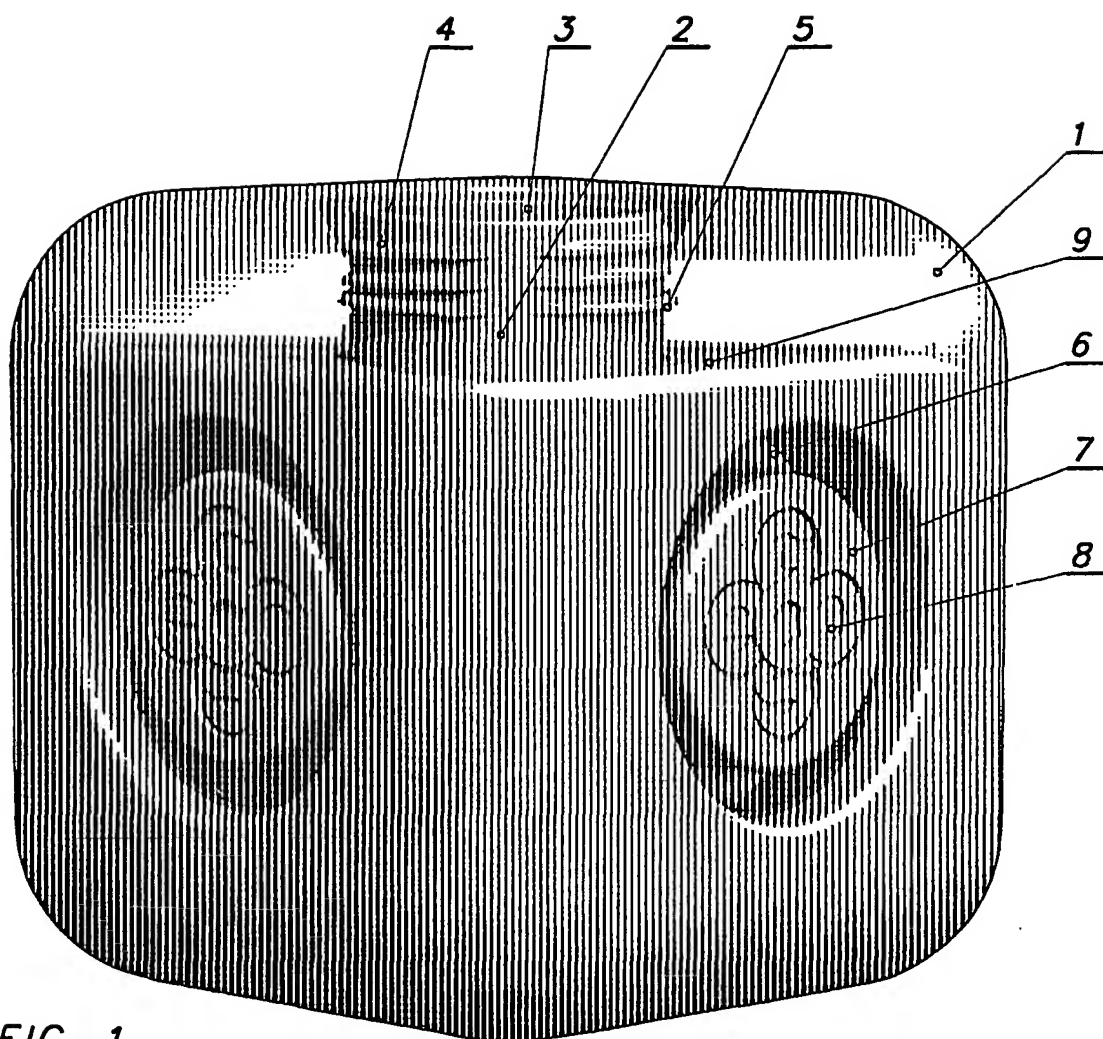


FIG. 1

2 / 31

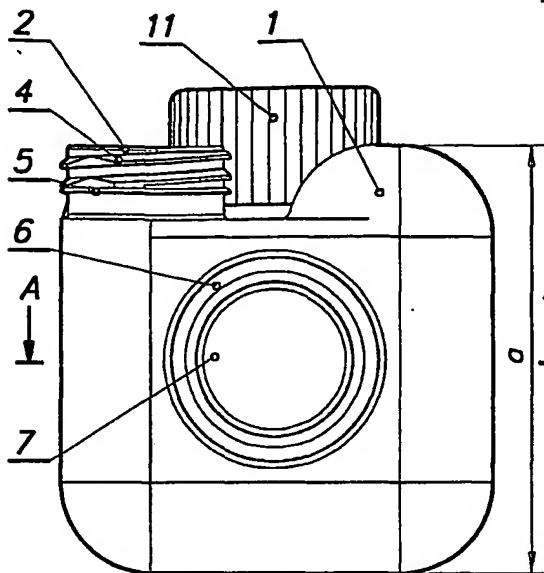


FIG. 2

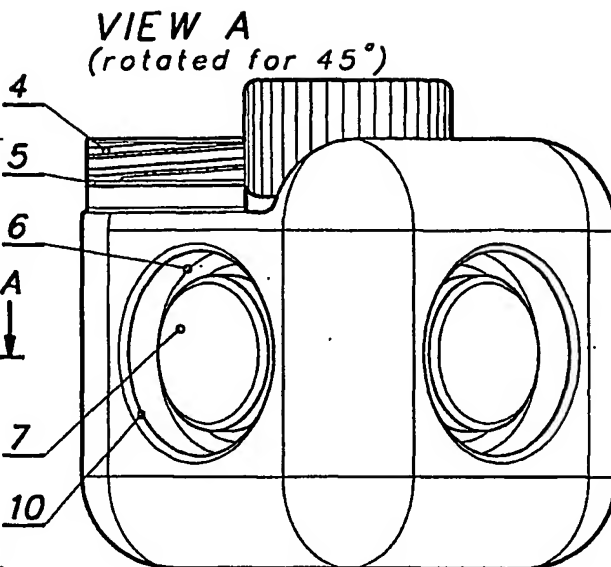


FIG. 5

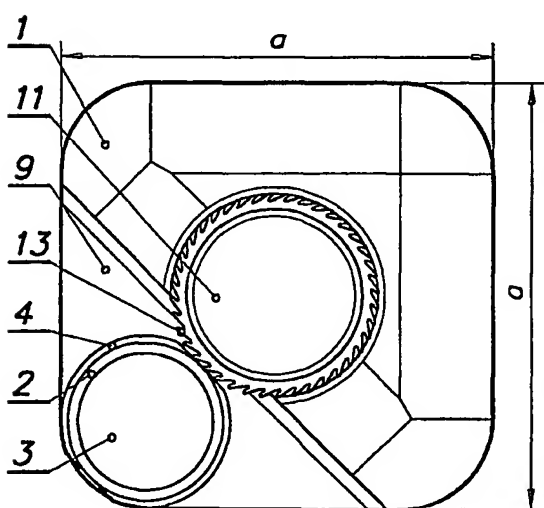


FIG. 3

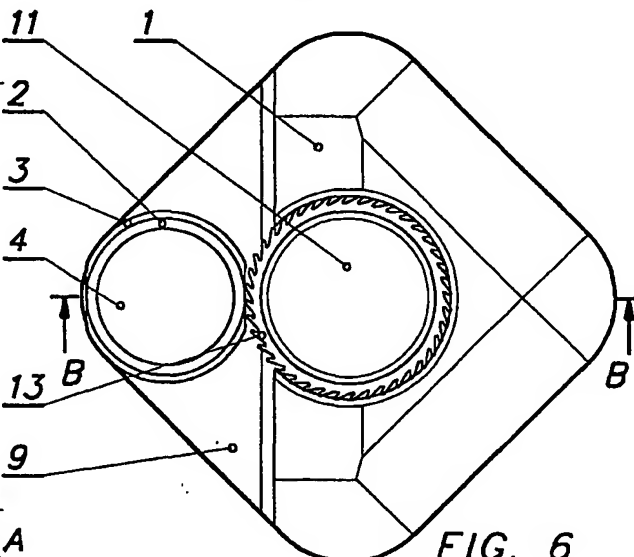


FIG. 6

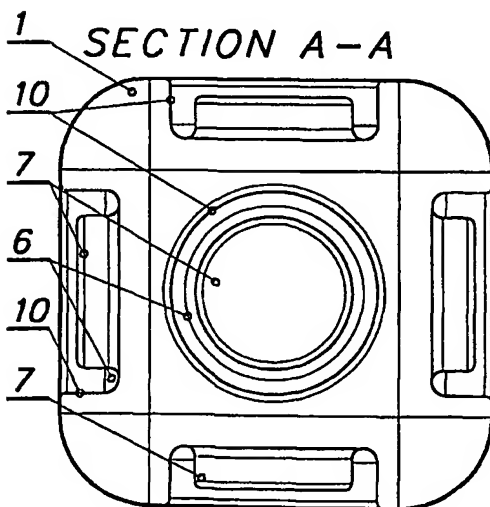


FIG. 4

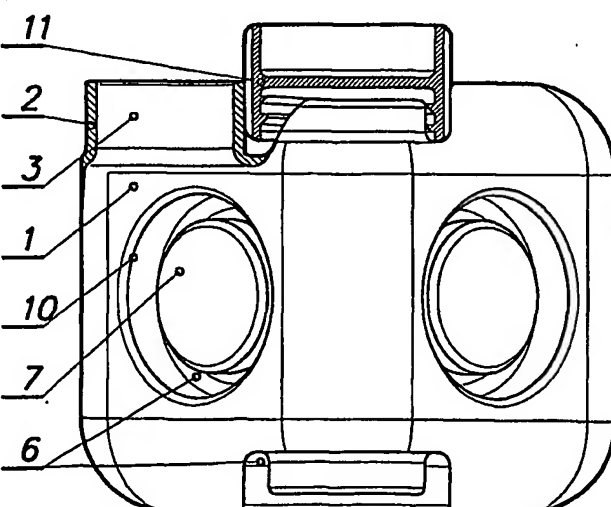


FIG. 7

VIEW B

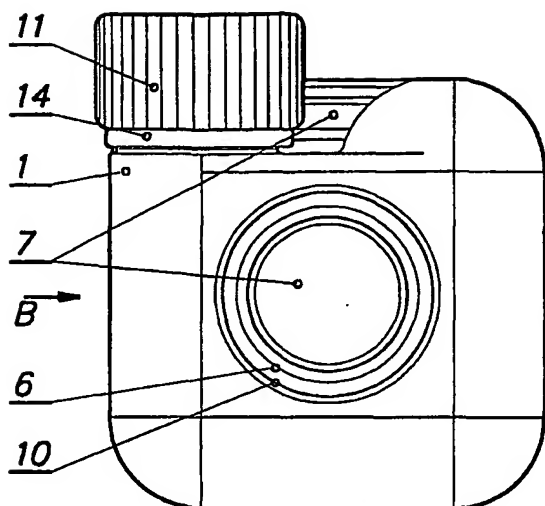


FIG. 8

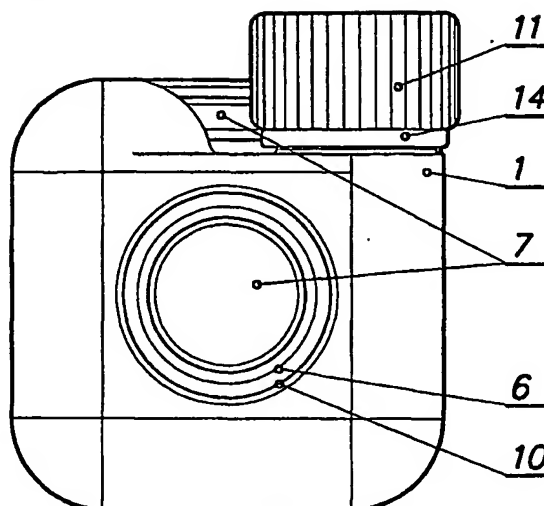


FIG. 10

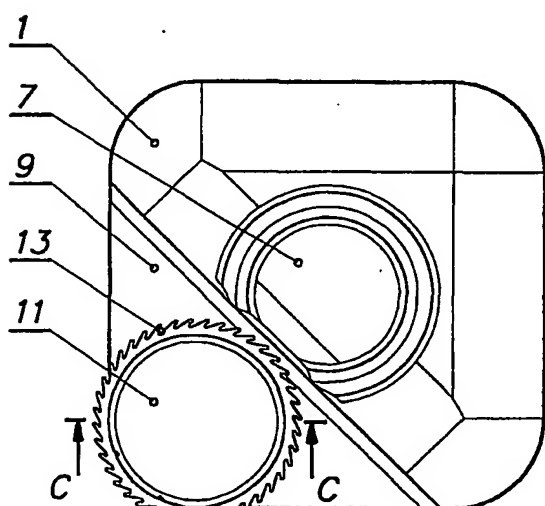


FIG. 9

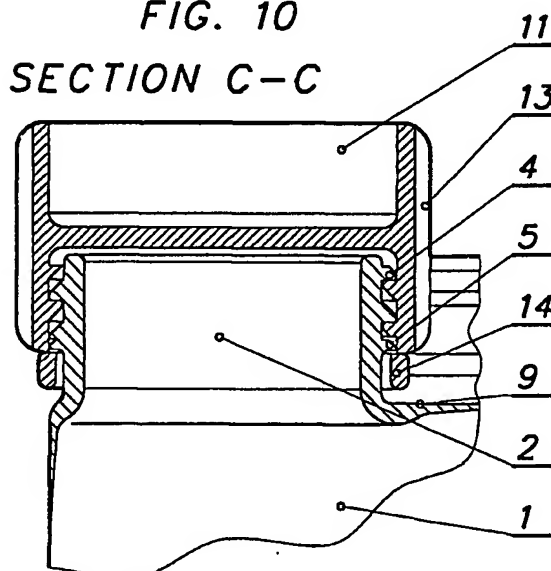


FIG. 11

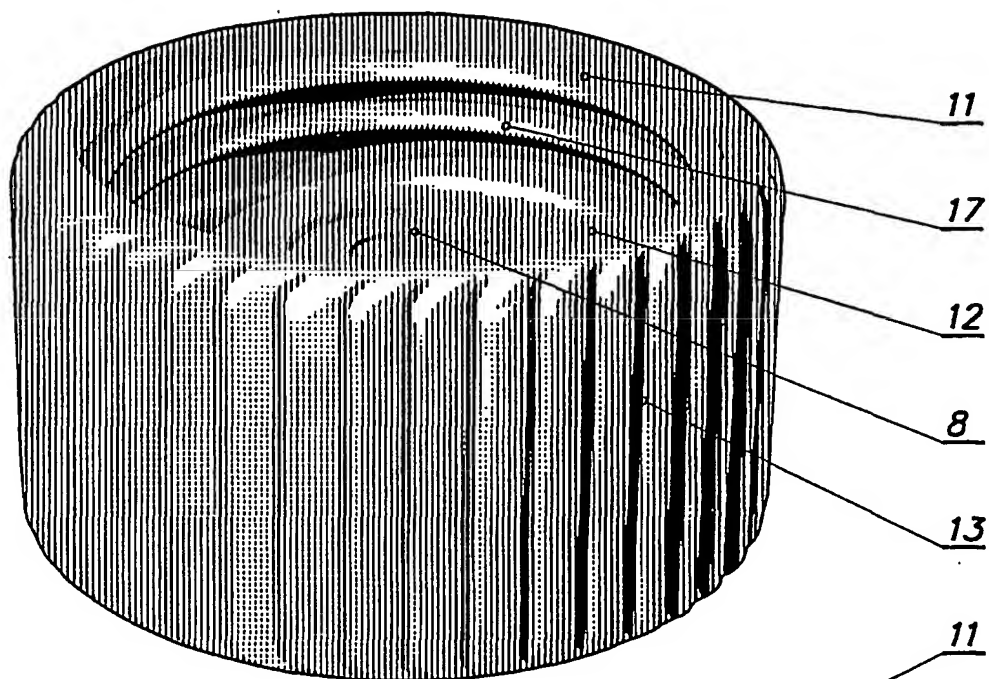


FIG. 12

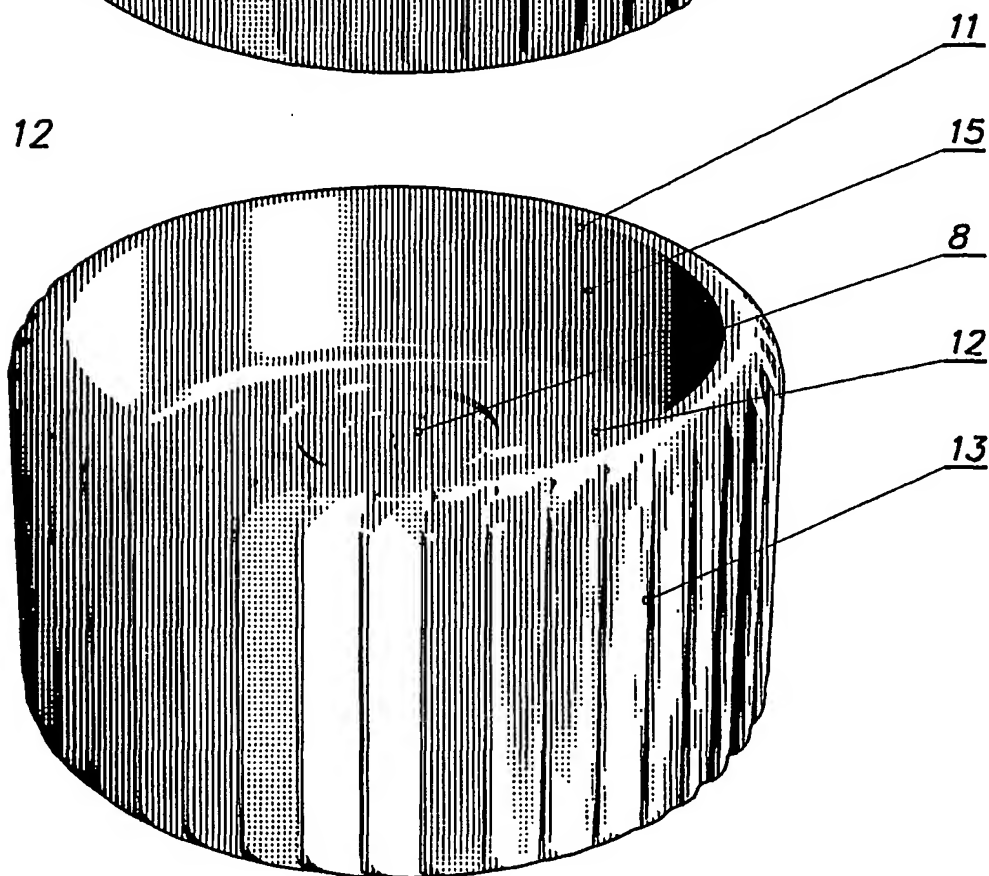


FIG. 13

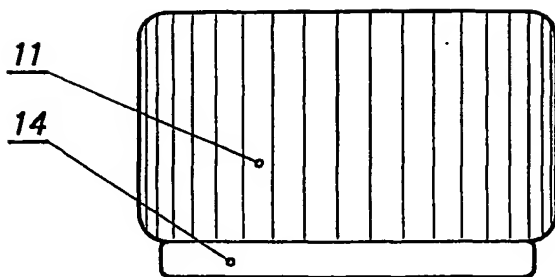


FIG. 14

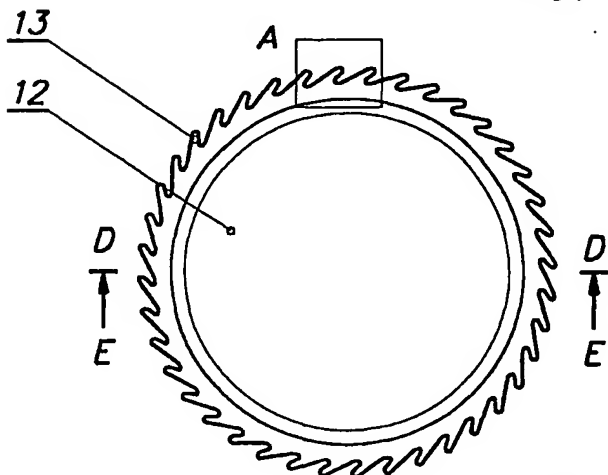


FIG. 15

DETAIL A

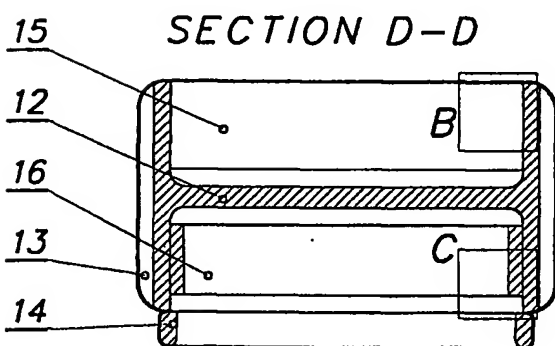
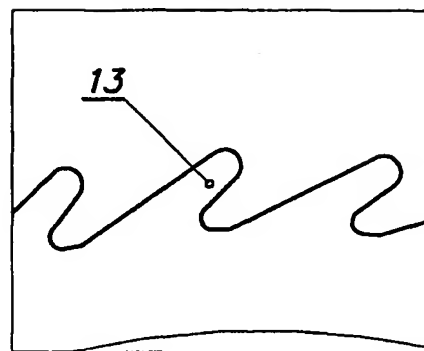
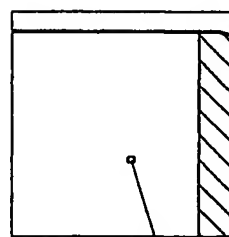


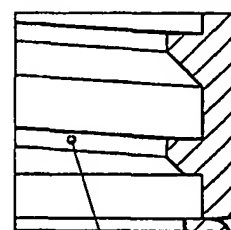
FIG. 16

DETAIL B



15

DETAIL C



16

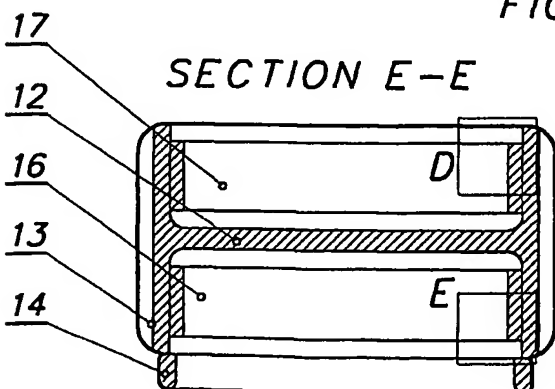
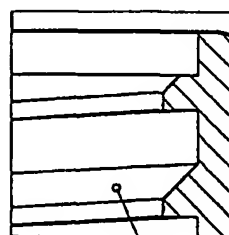


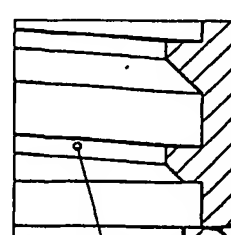
FIG. 17

DETAIL D



17

DETAIL E



16

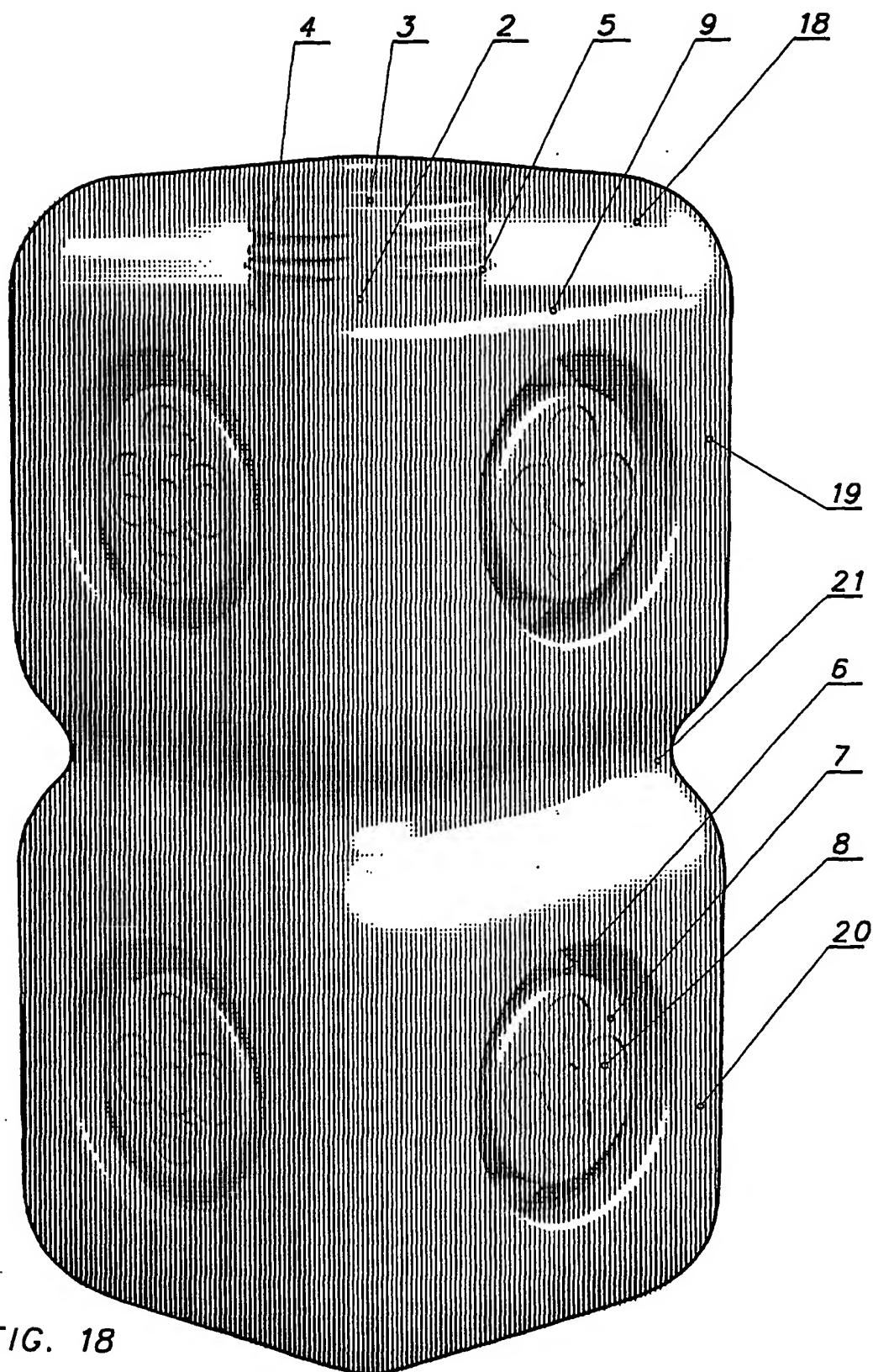


FIG. 18

7/31

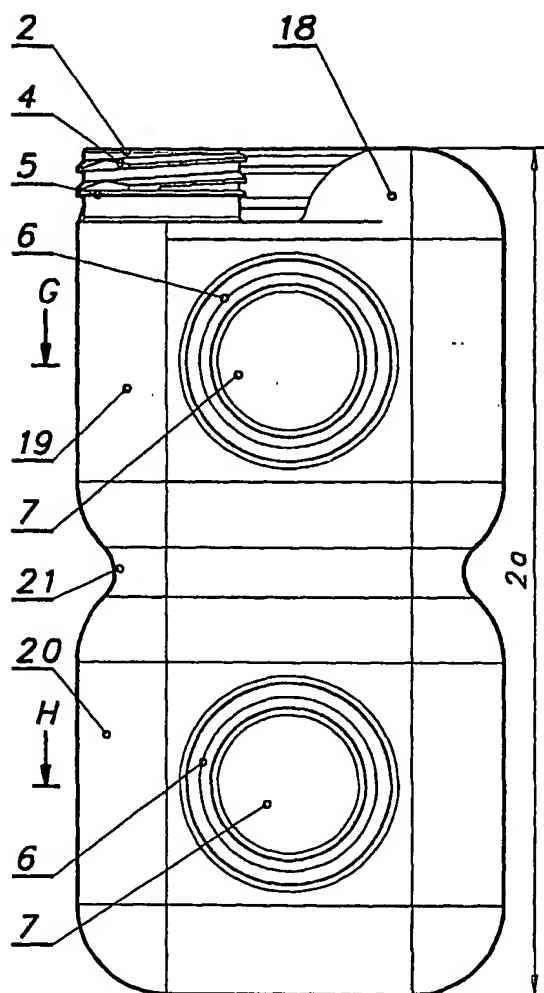


FIG. 19

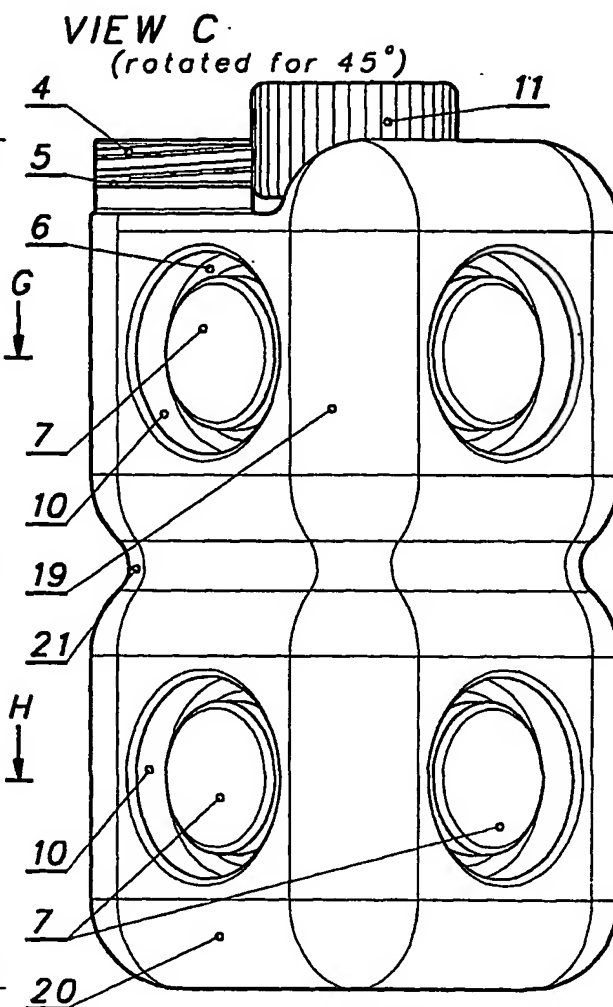


FIG. 21

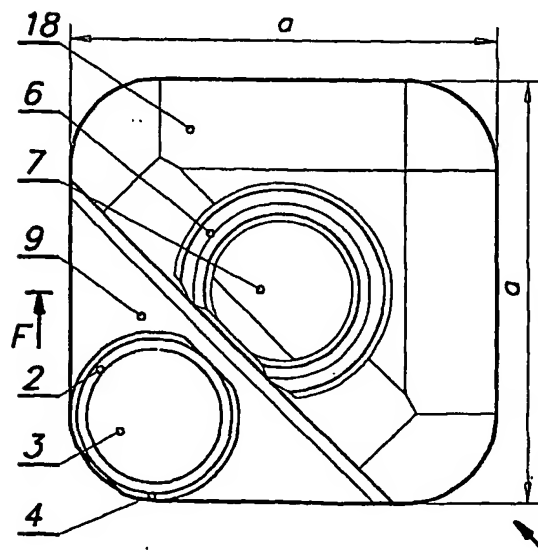


FIG. 20

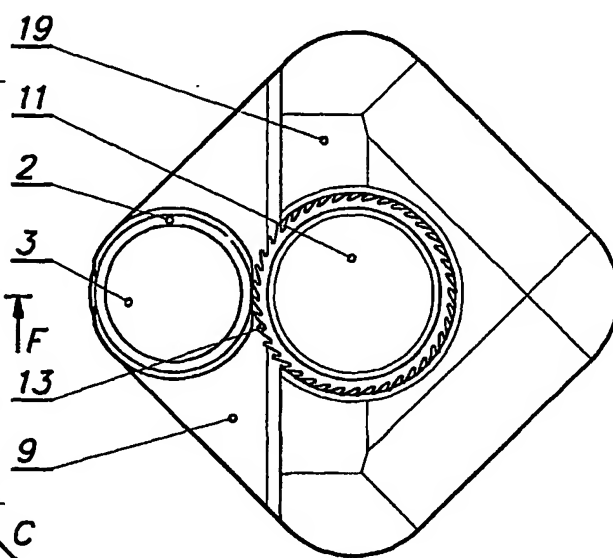


FIG. 22

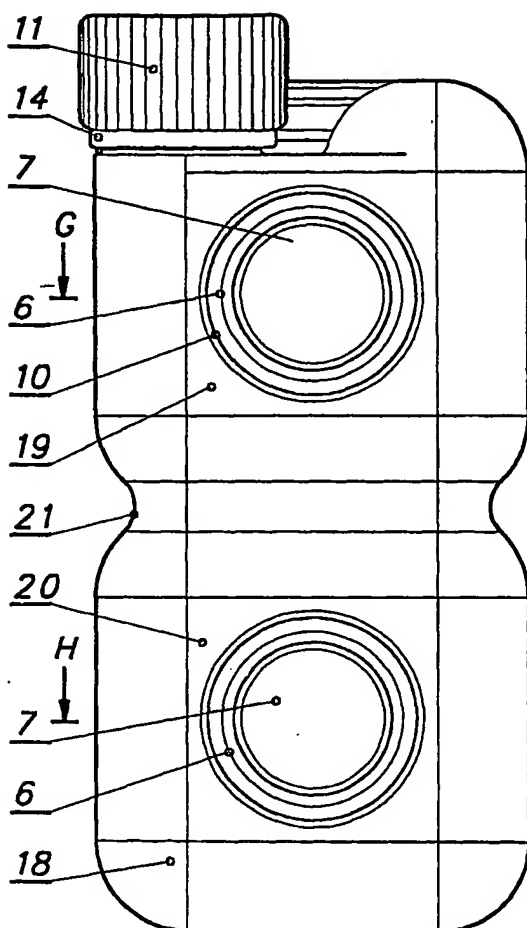


FIG. 23

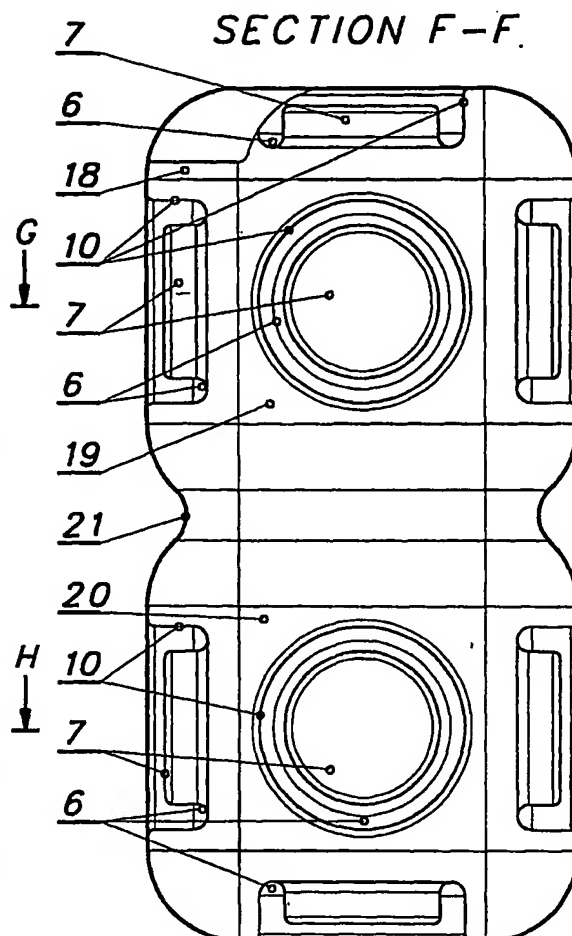


FIG. 24

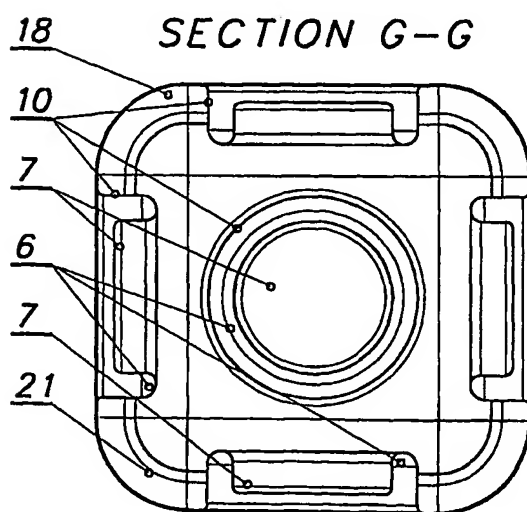


FIG. 25

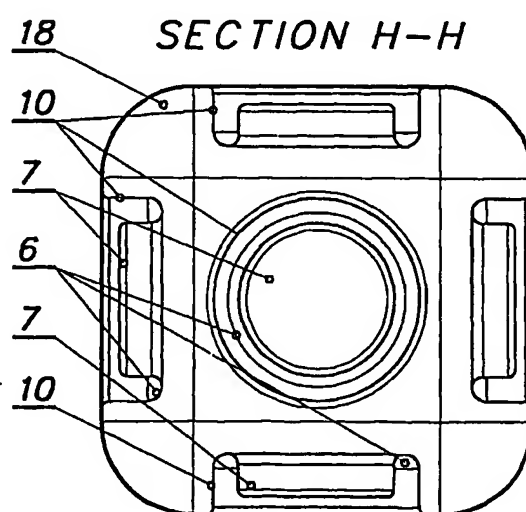


FIG. 26

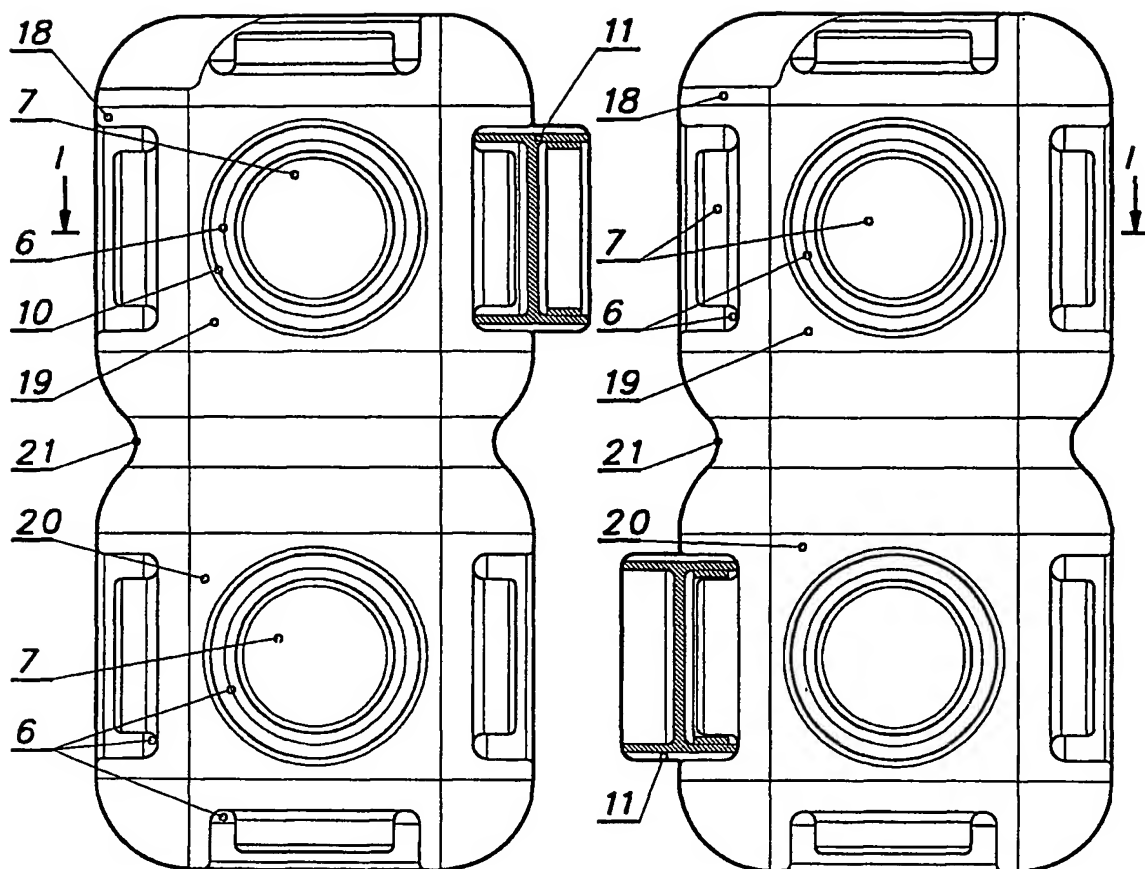


FIG. 27

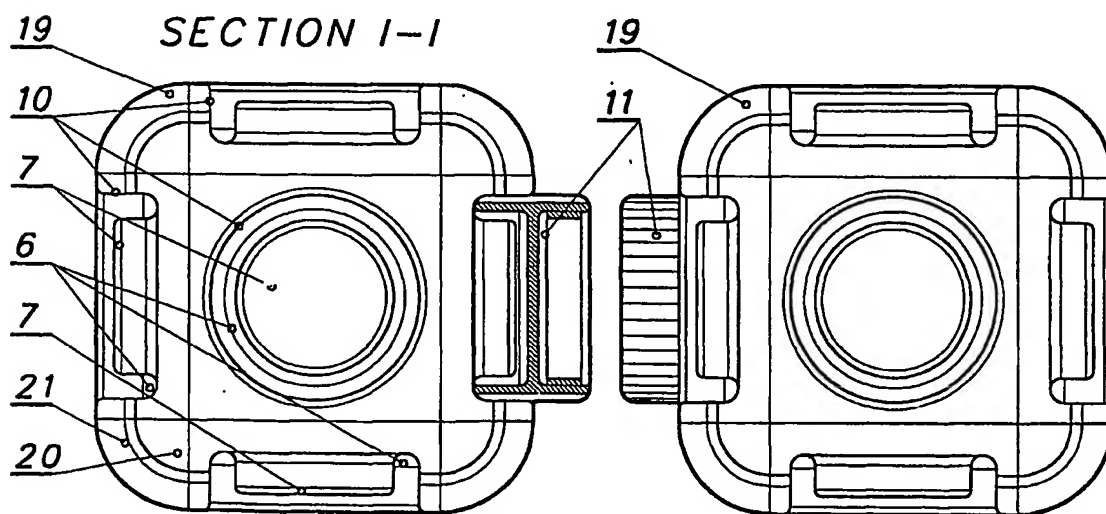


FIG. 28

10 / 31

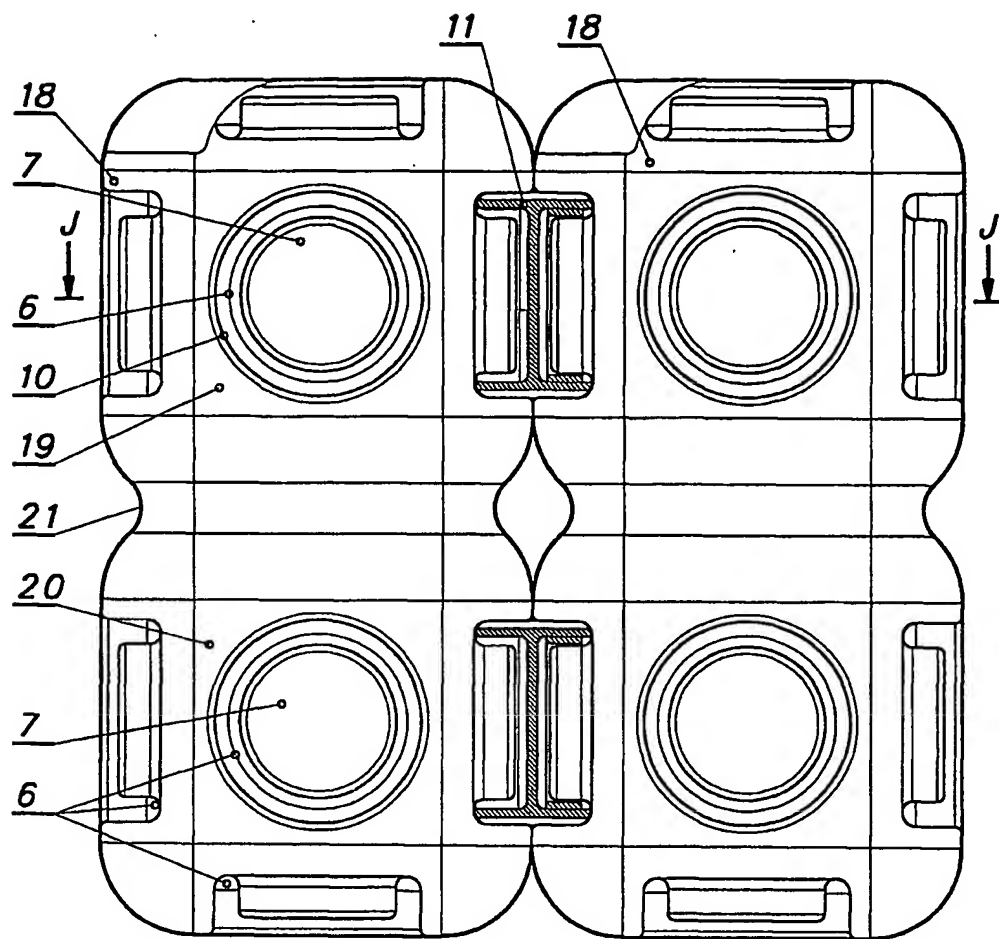


FIG. 29

SECTION J-J

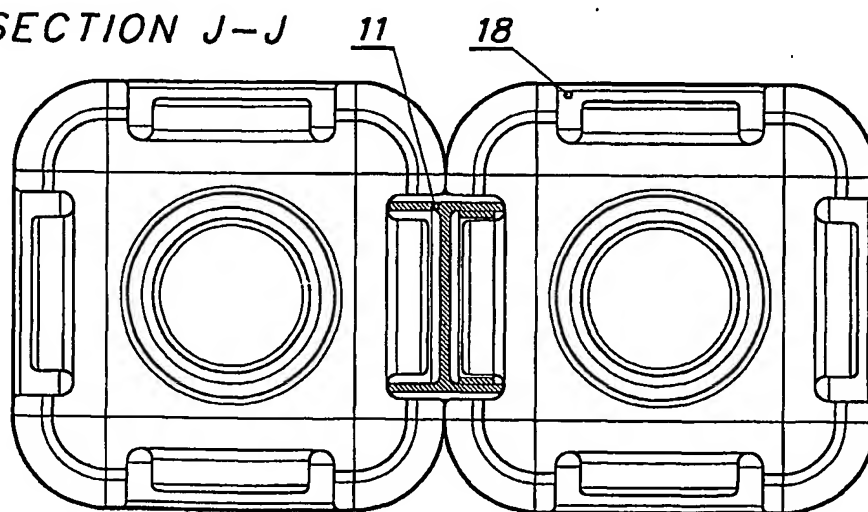


FIG. 30

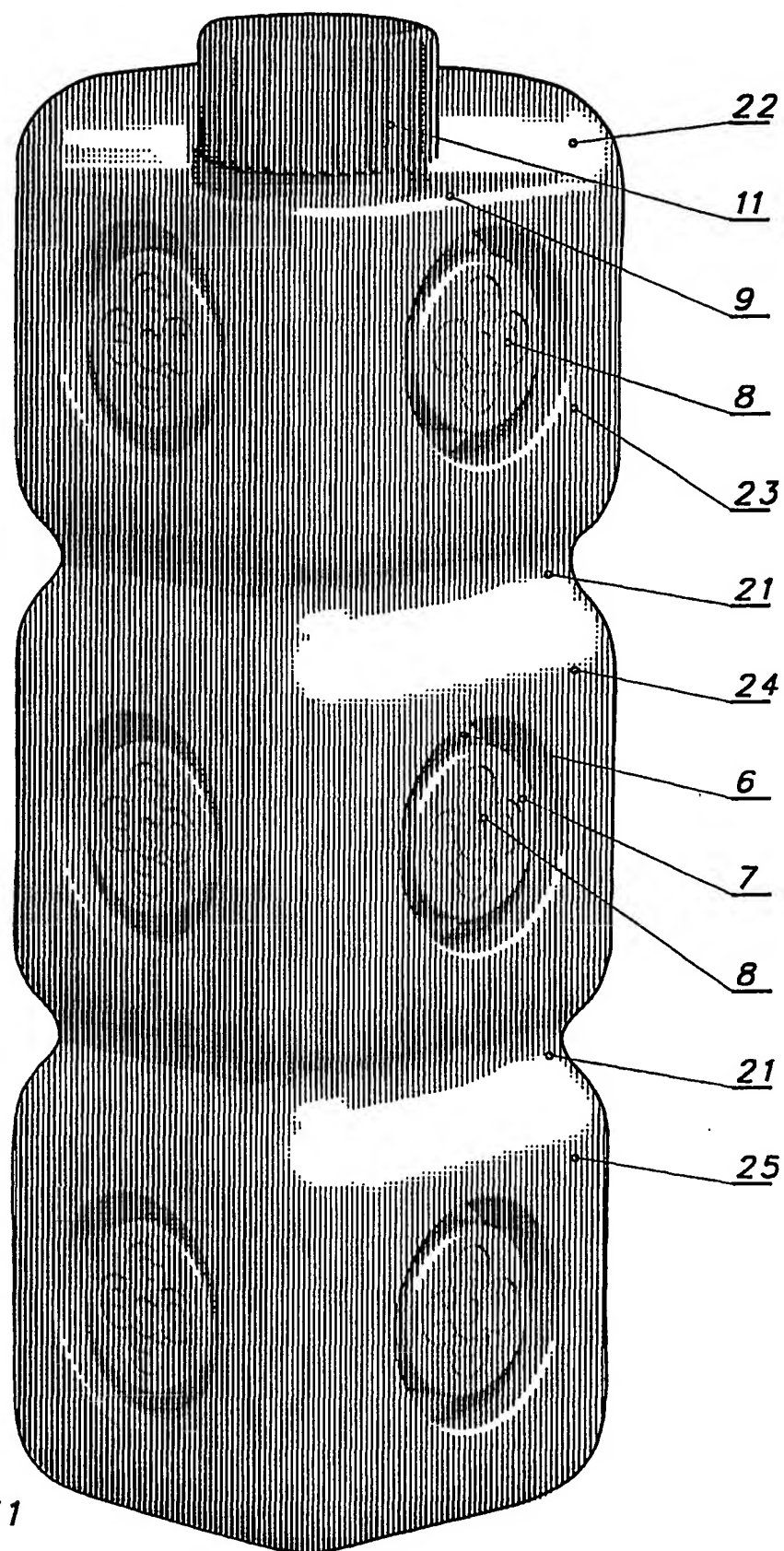


FIG. 31

12 / 31

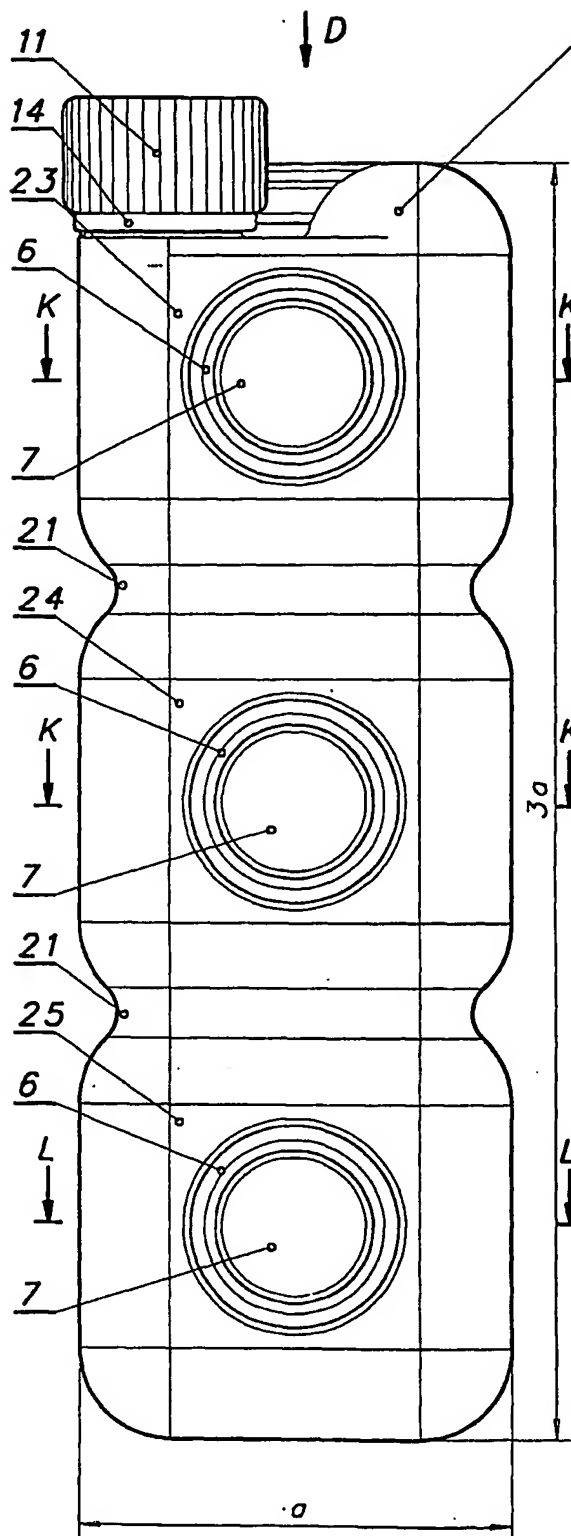


FIG. 32

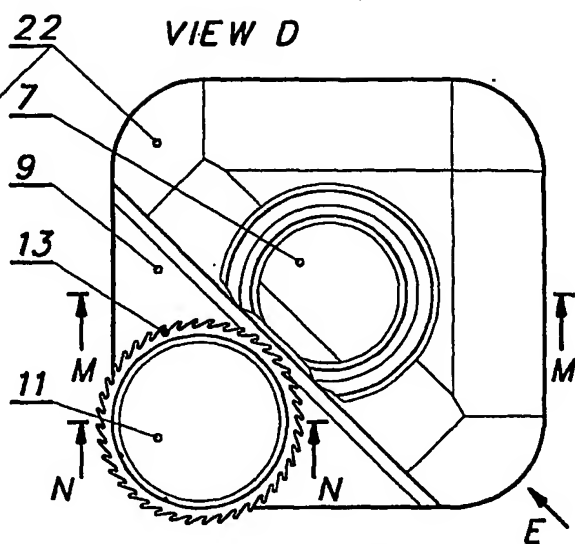


FIG. 33

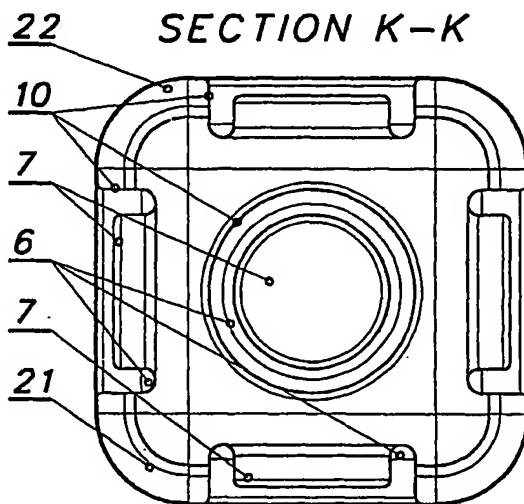


FIG. 34

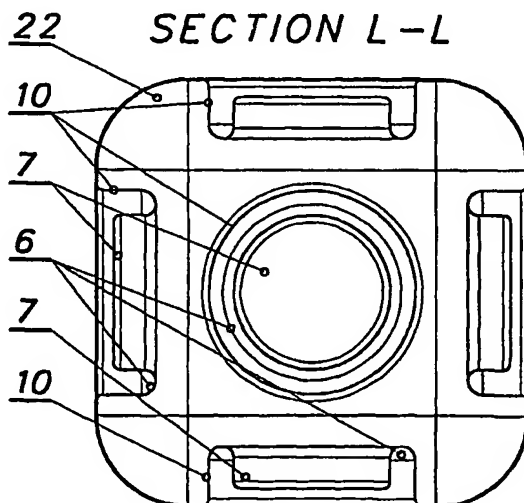


FIG. 35

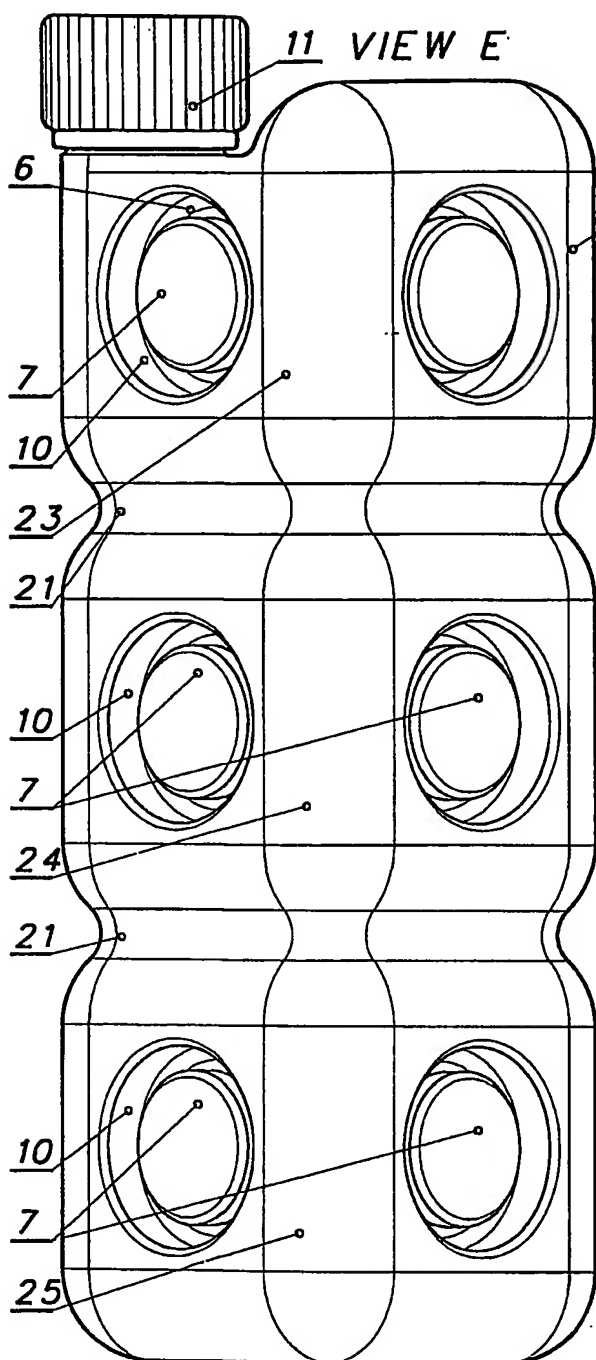


FIG. 36

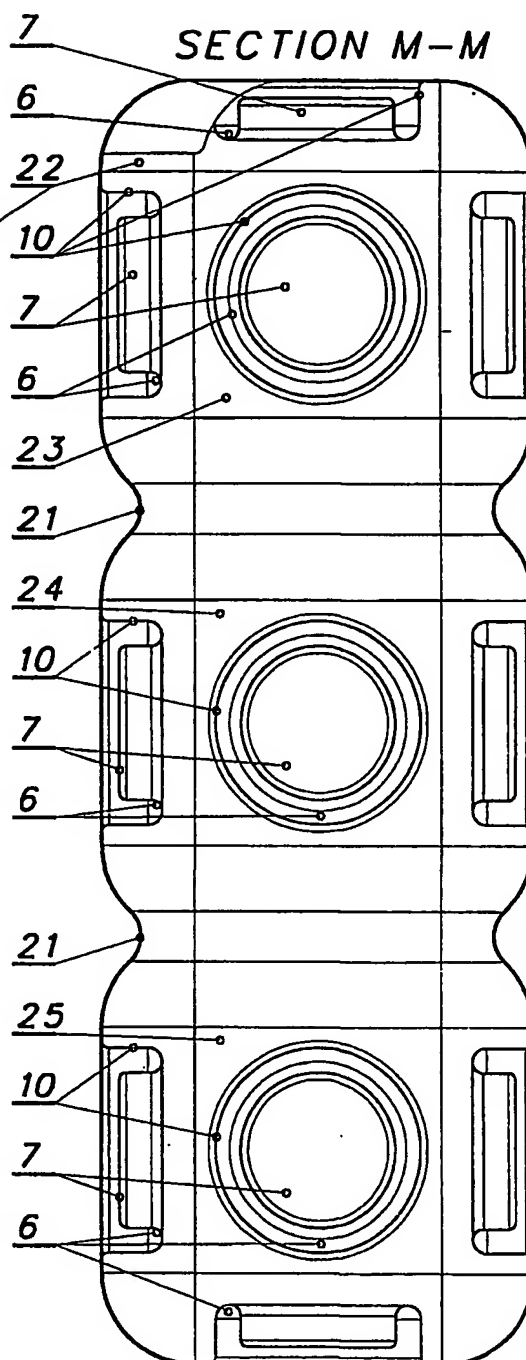


FIG. 37

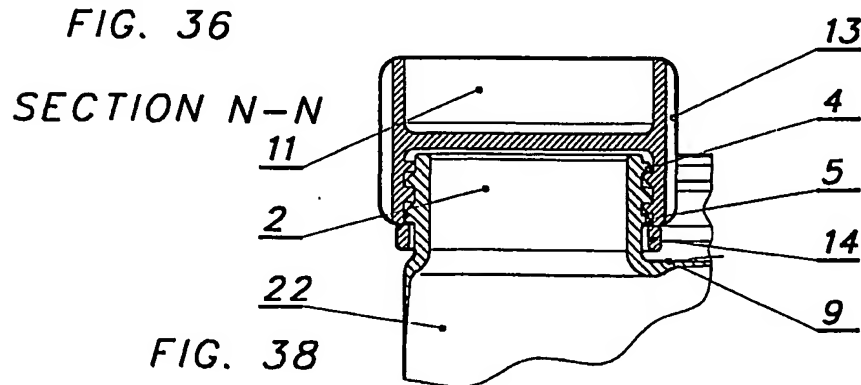


FIG. 38

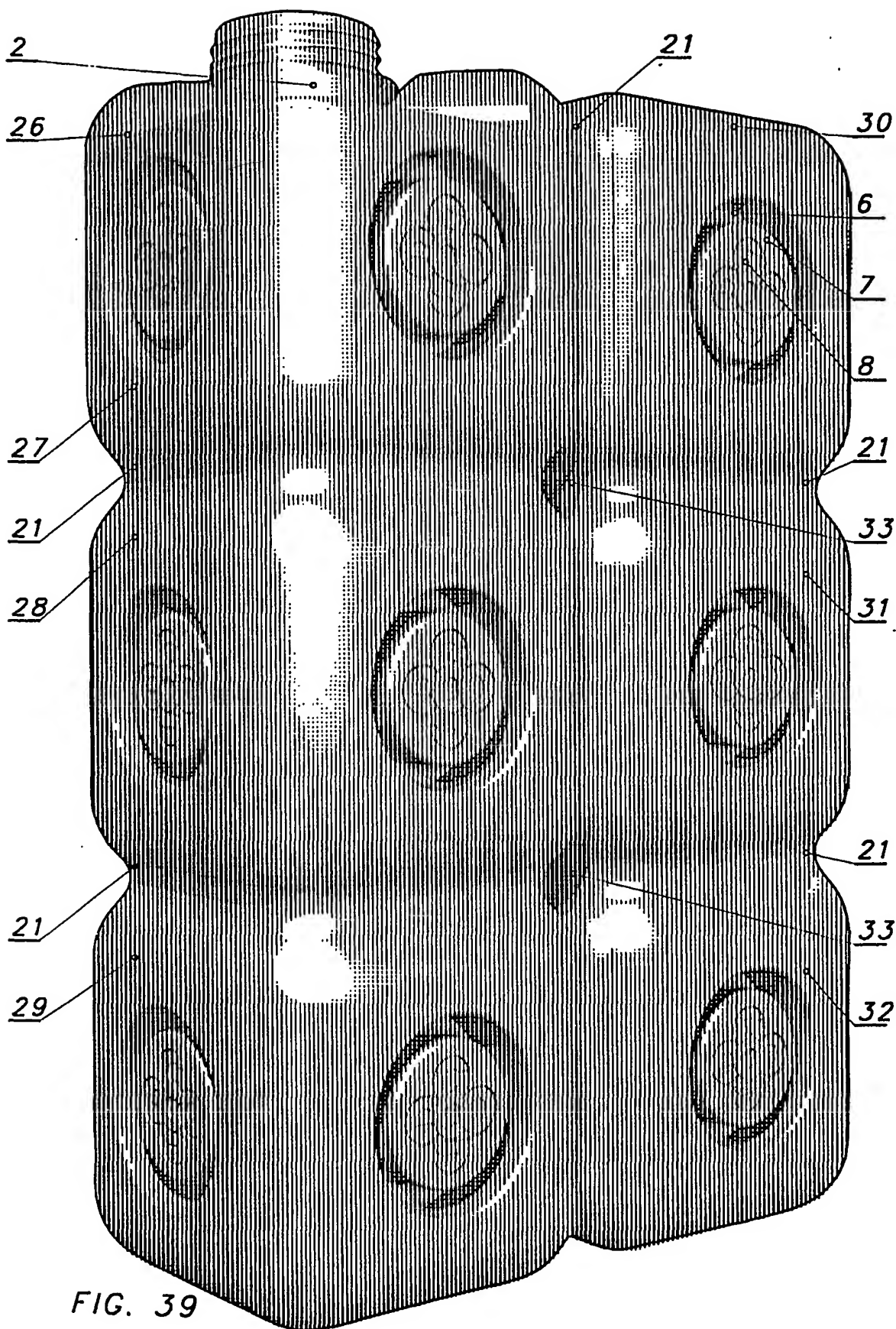


FIG. 39

VIEW F

SECTION 0-0

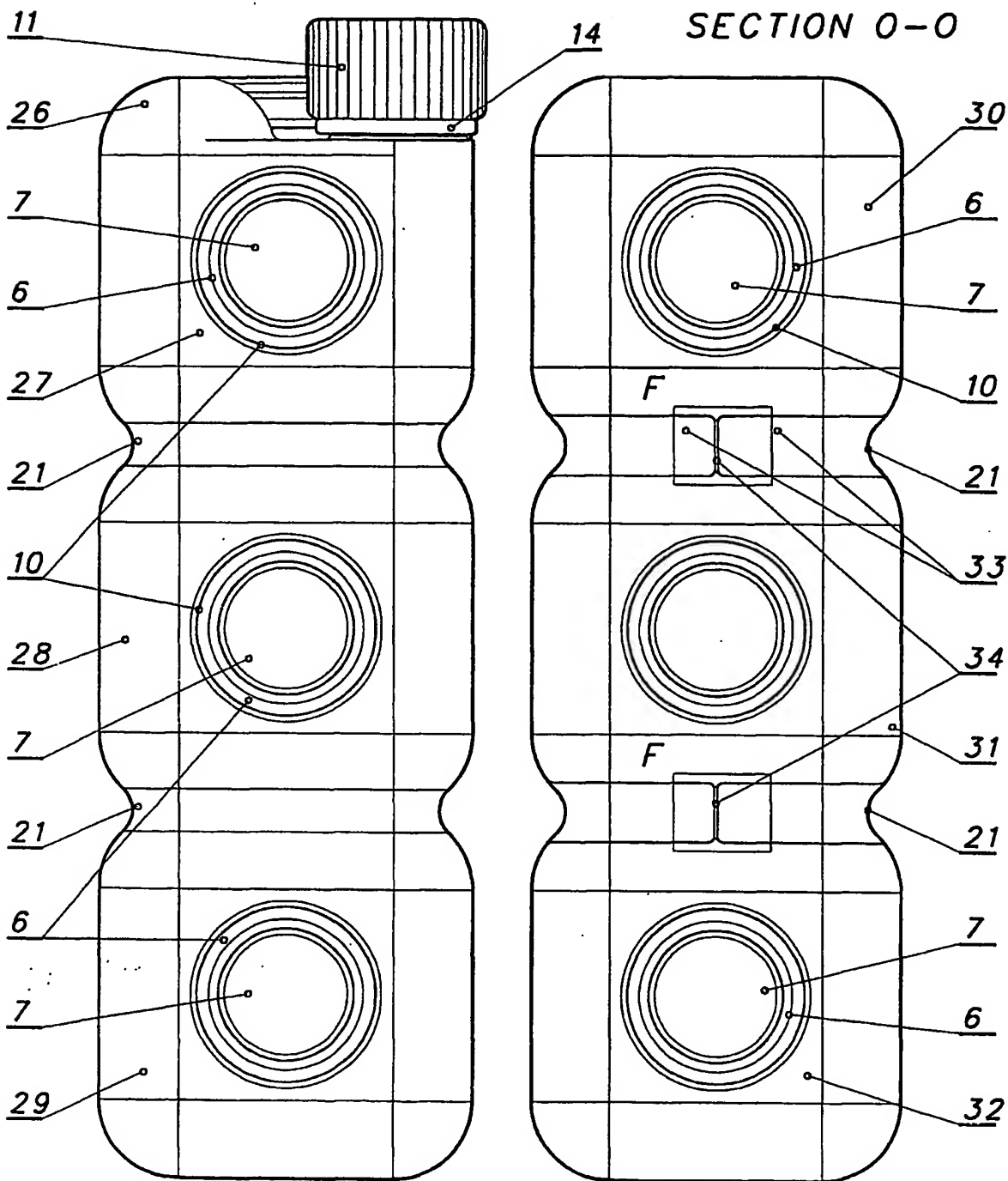
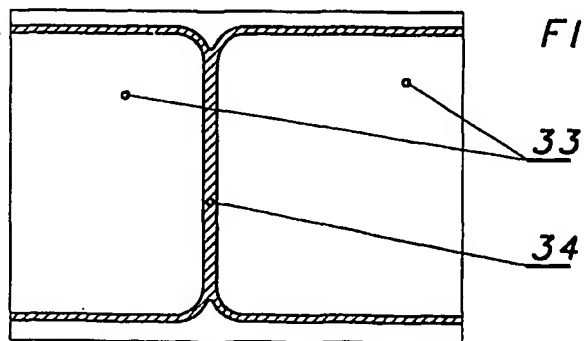


FIG. 41

FIG. 42

DETAIL F

FIG. 43



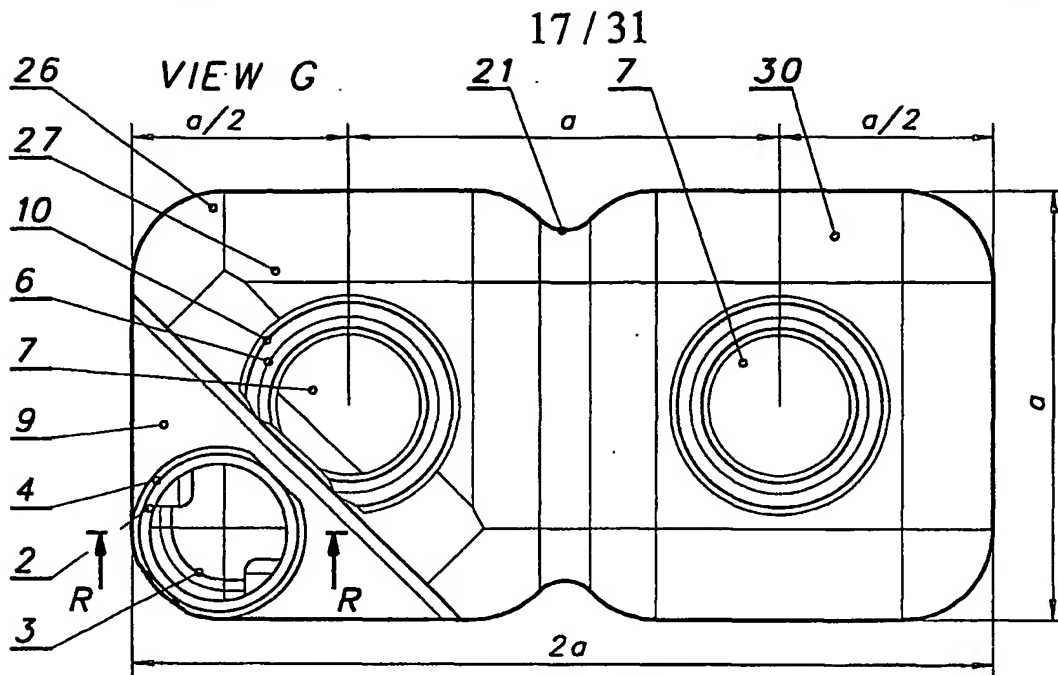


FIG. 44

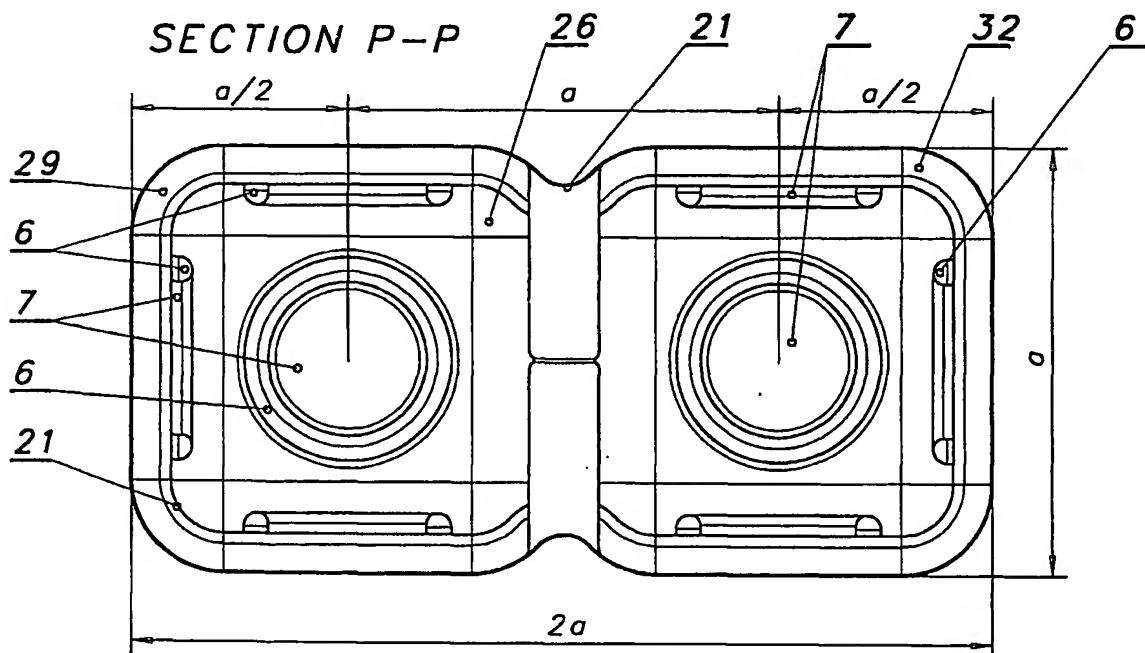


FIG. 45

SECTION R-R

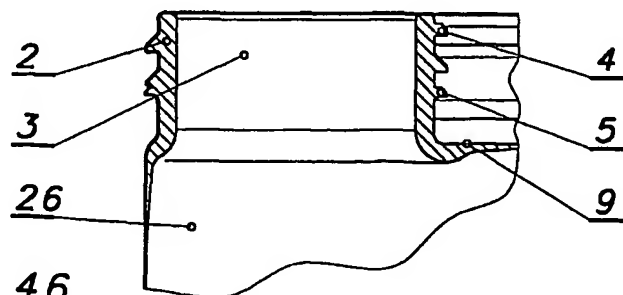


FIG. 46

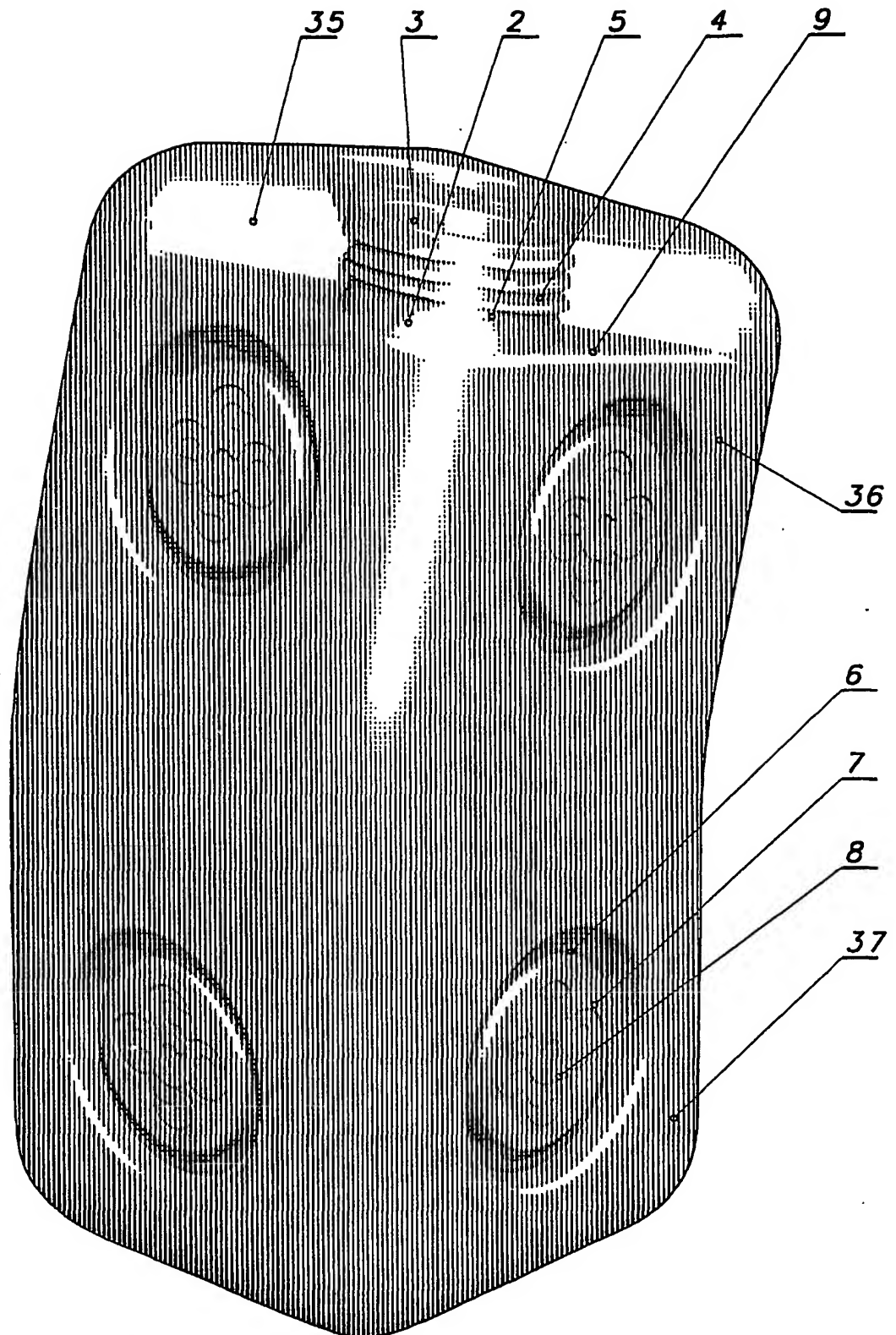


FIG. 47

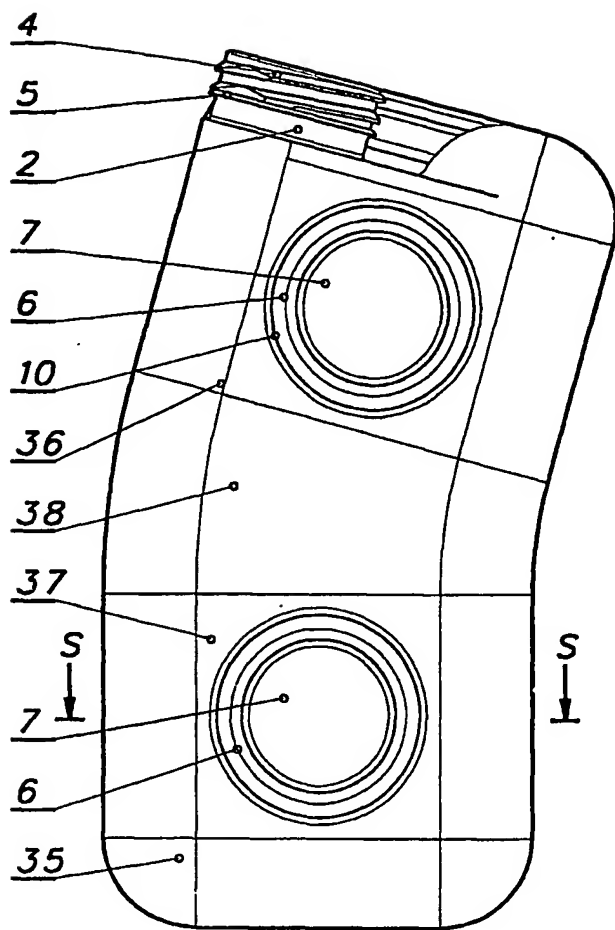


FIG. 48

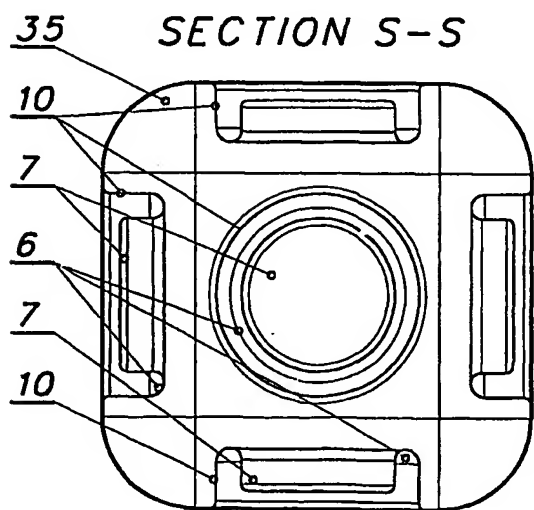


FIG. 49

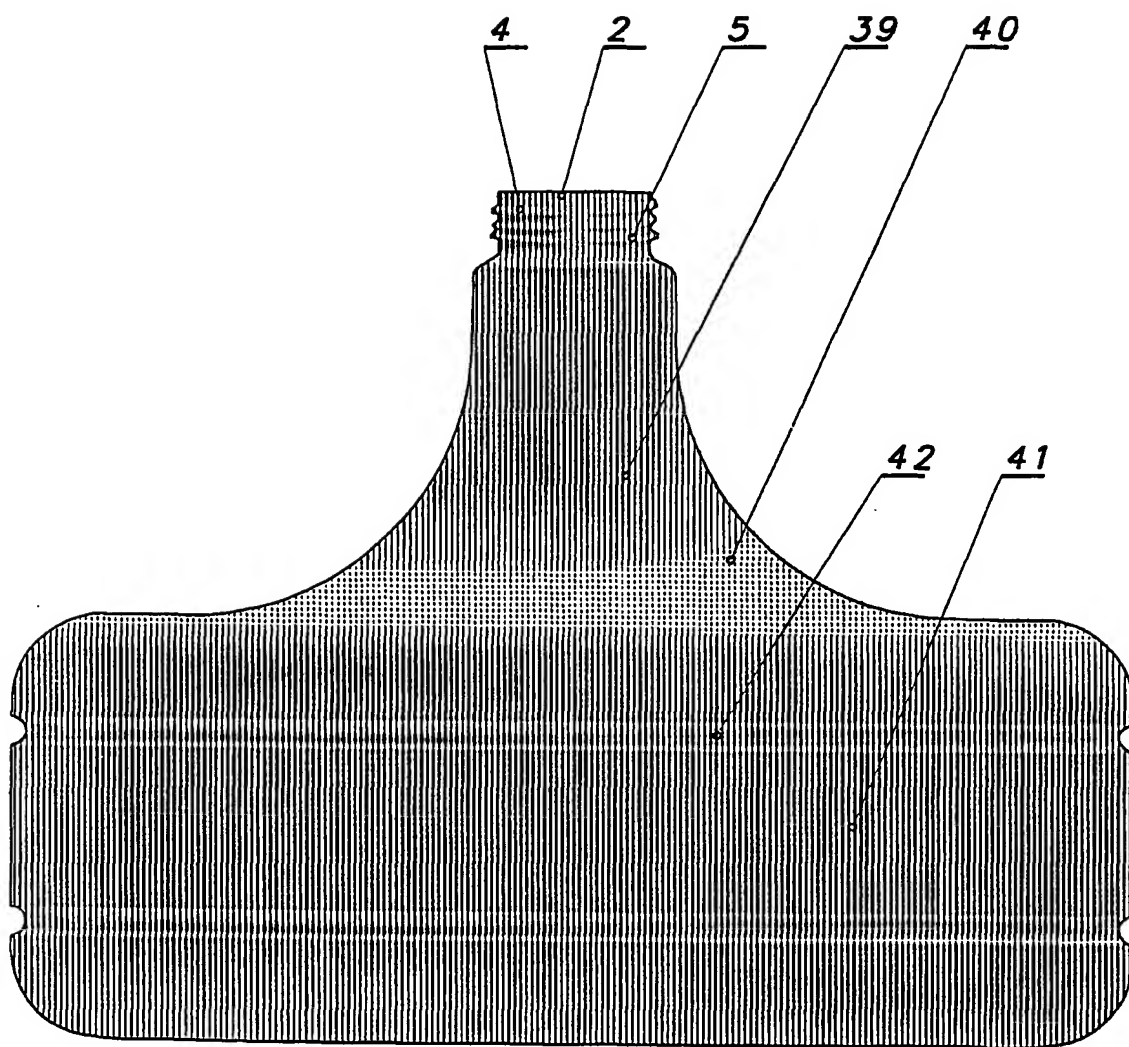


FIG. 50

21 / 31

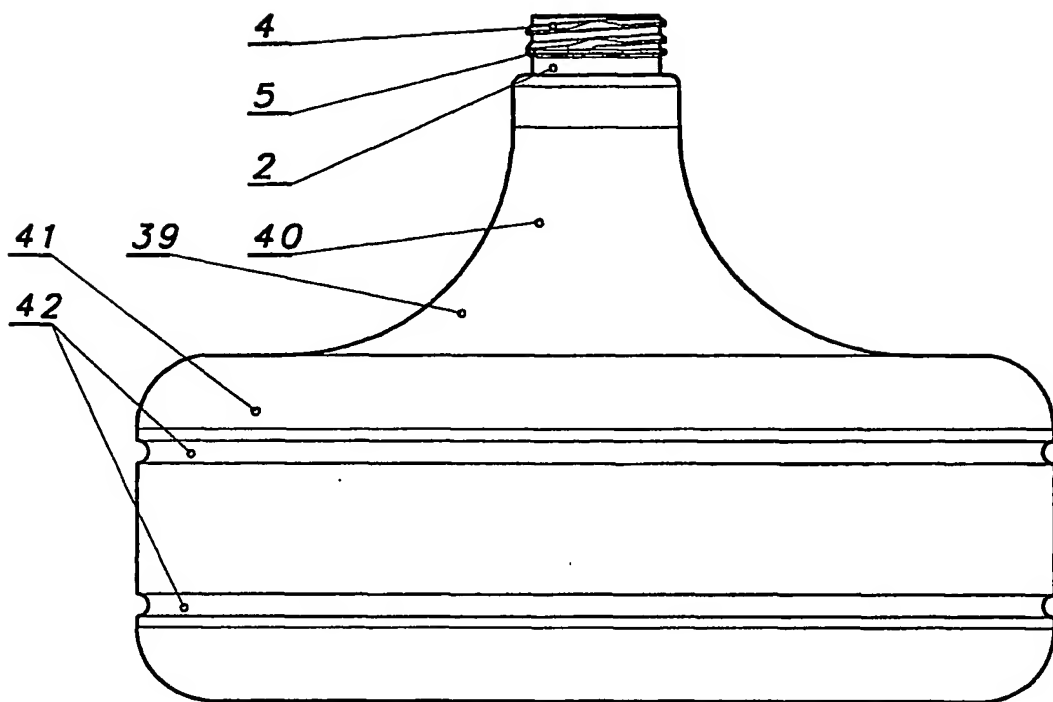


FIG. 51

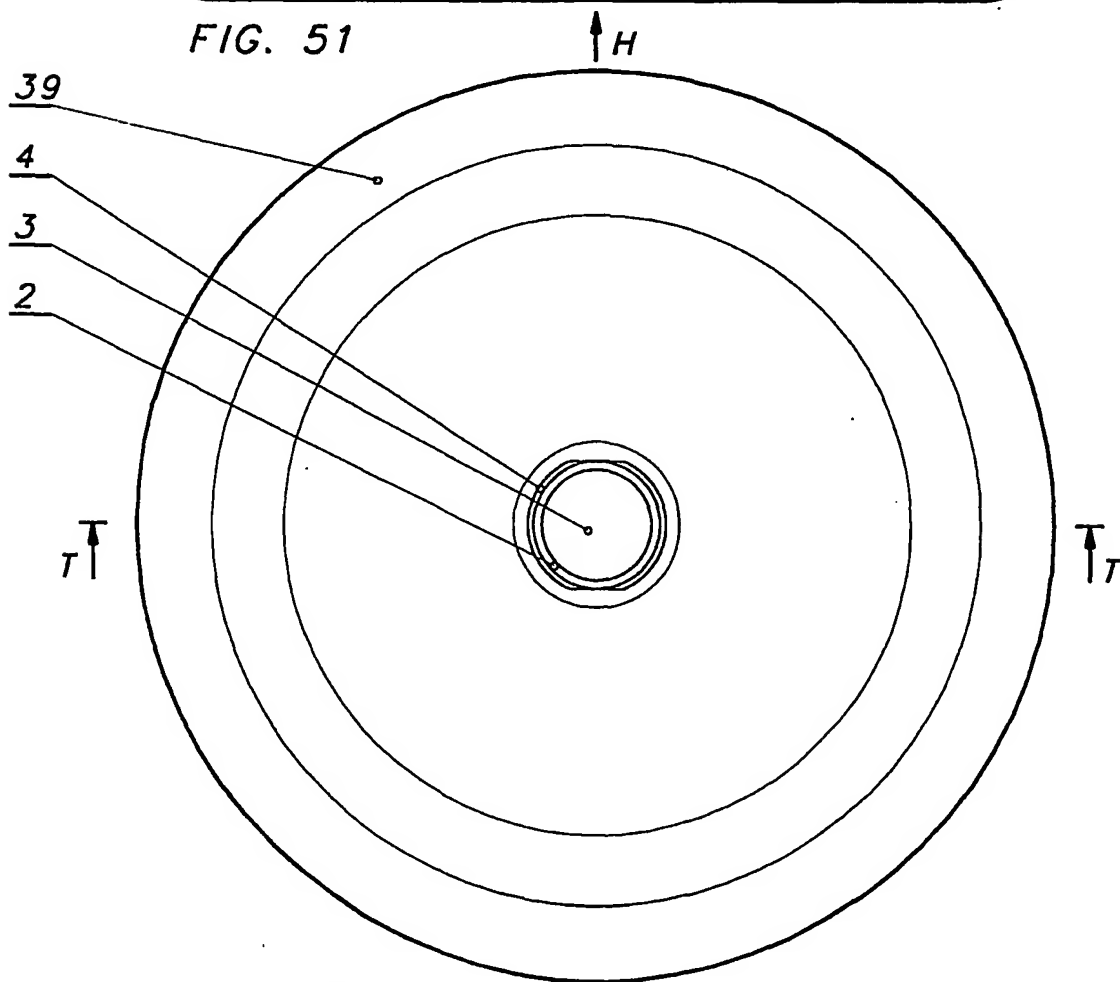
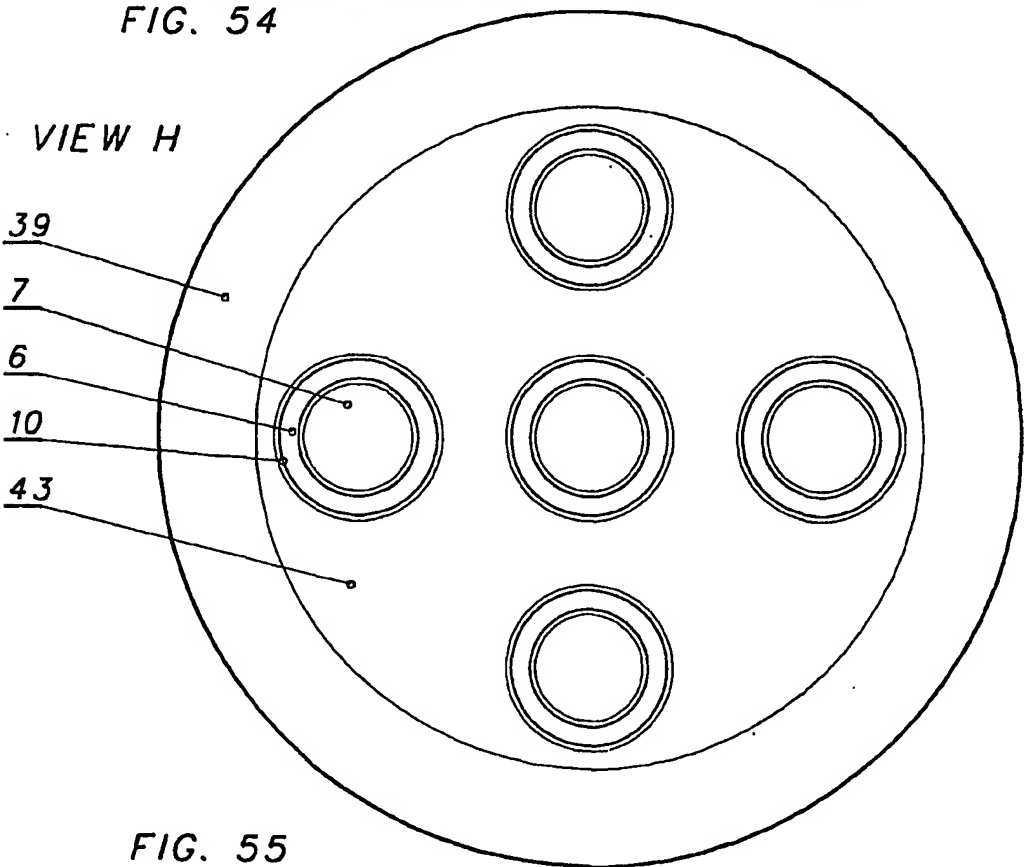
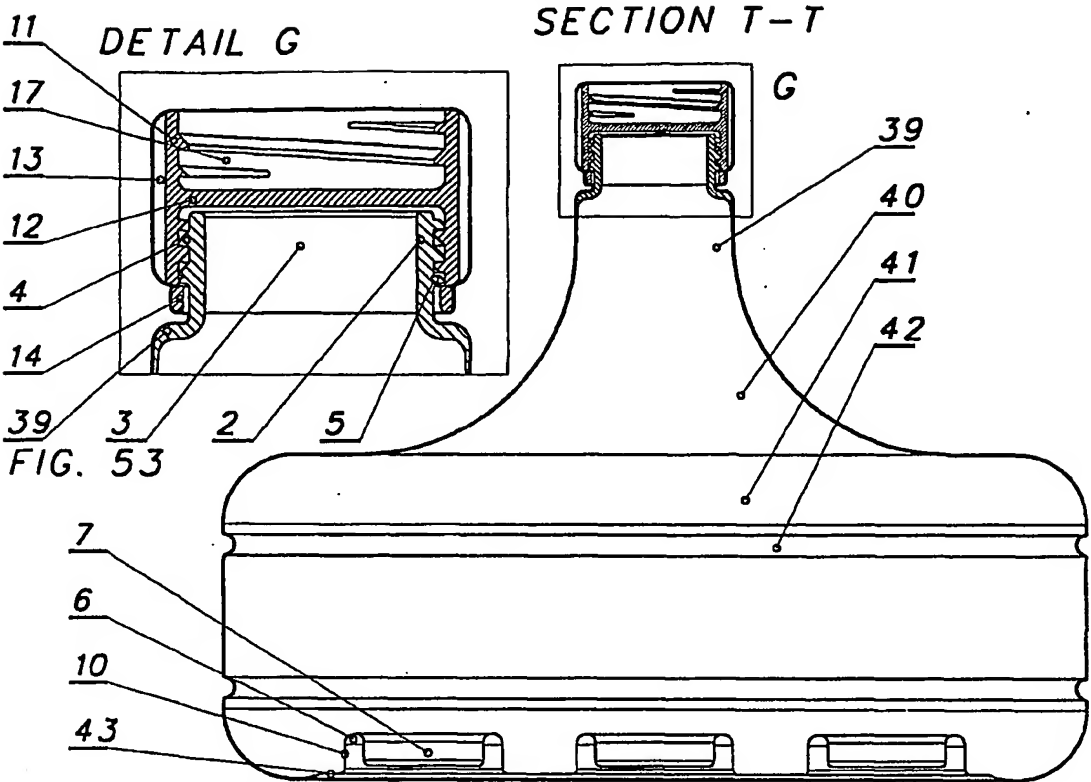


FIG. 52



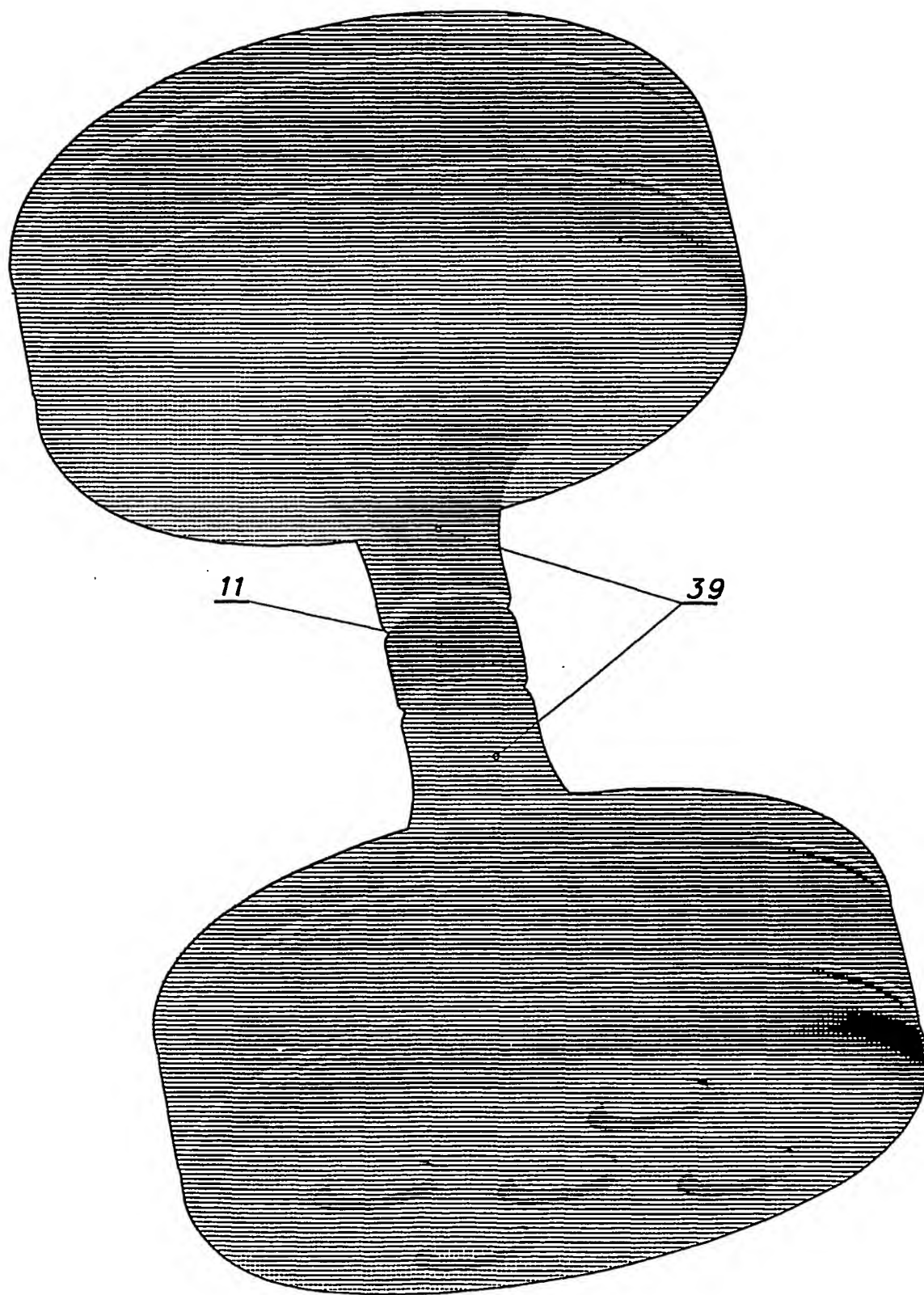


FIG. 56

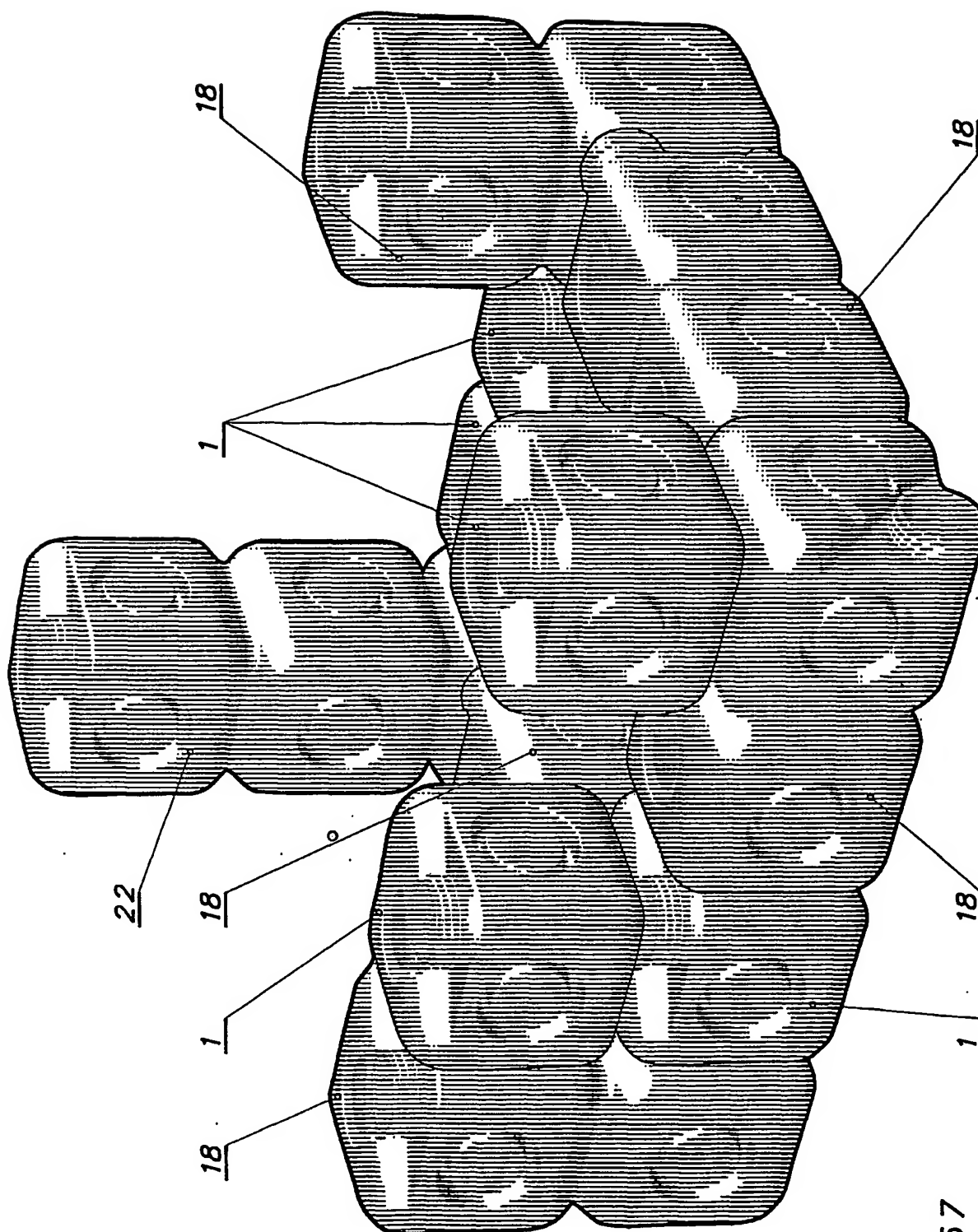


FIG. 57

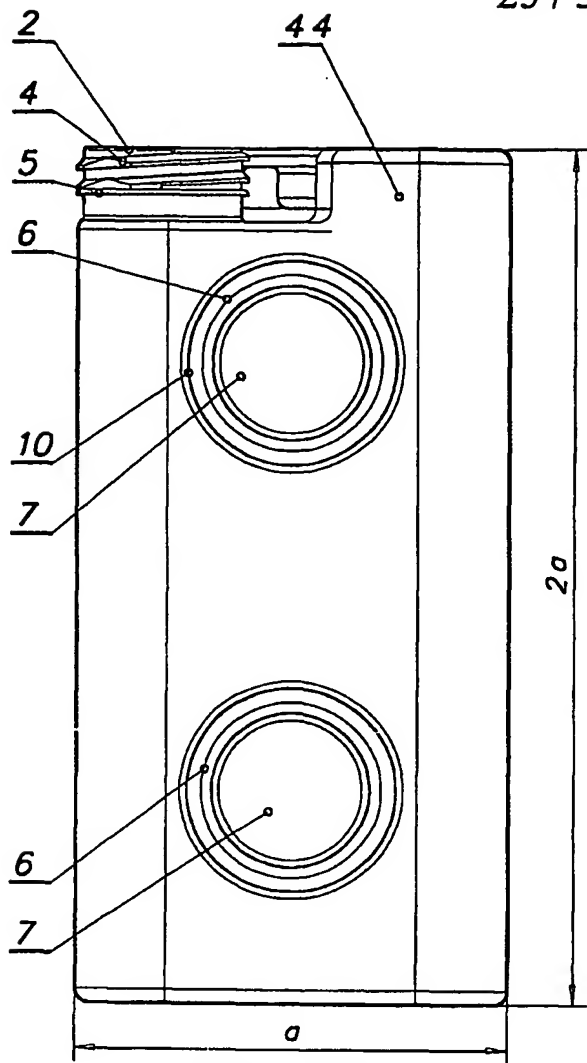


FIG. 58

VIEW 1

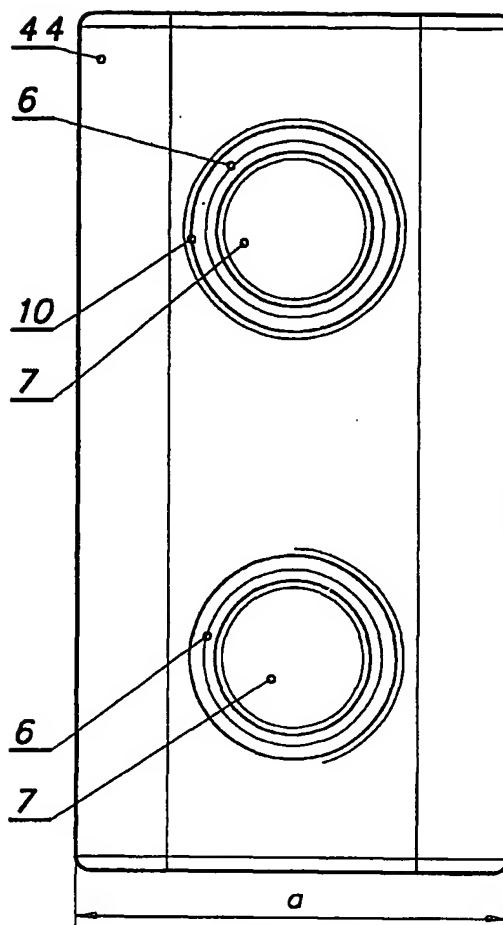


FIG. 60

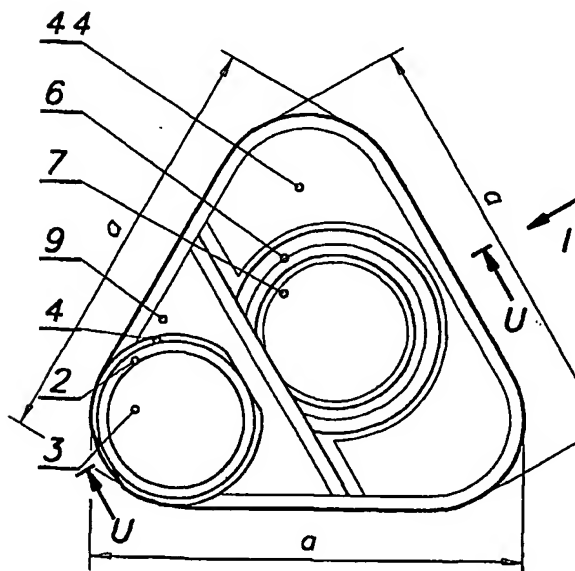


FIG. 59

SECTION U-U

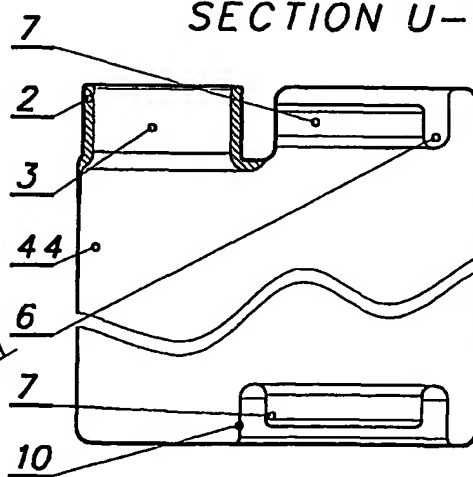
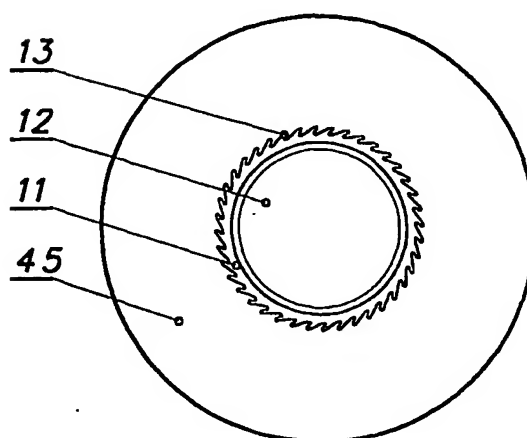
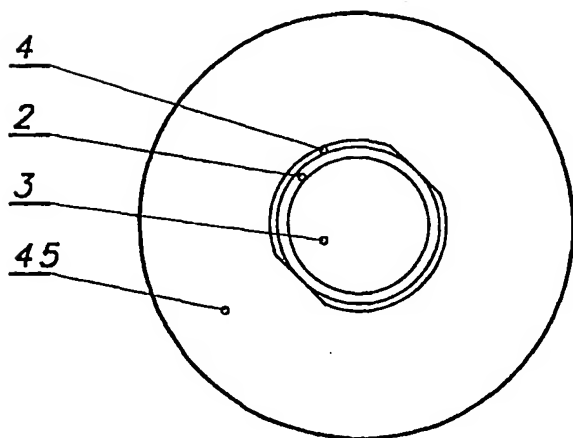
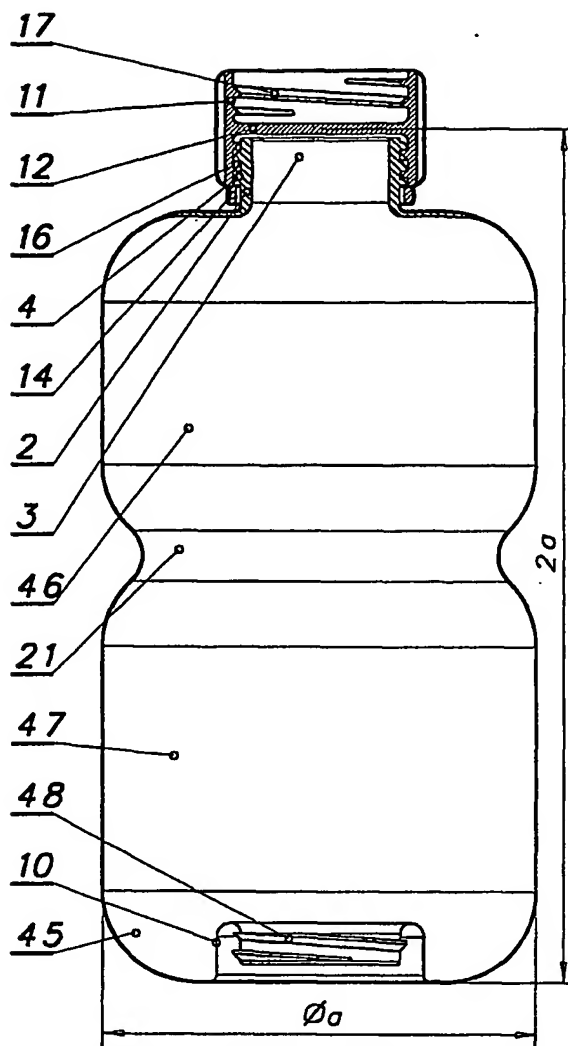
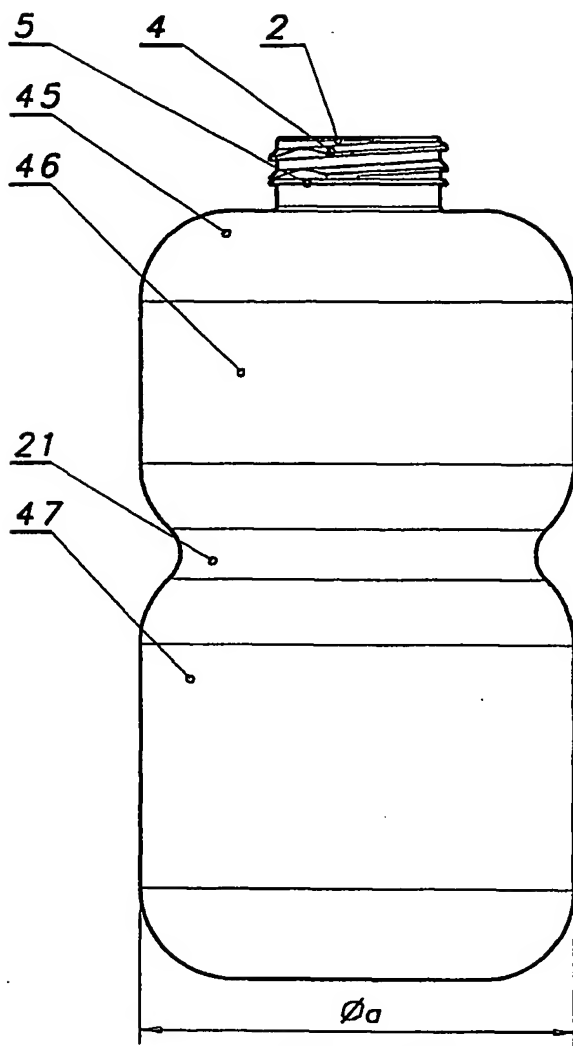


FIG. 61



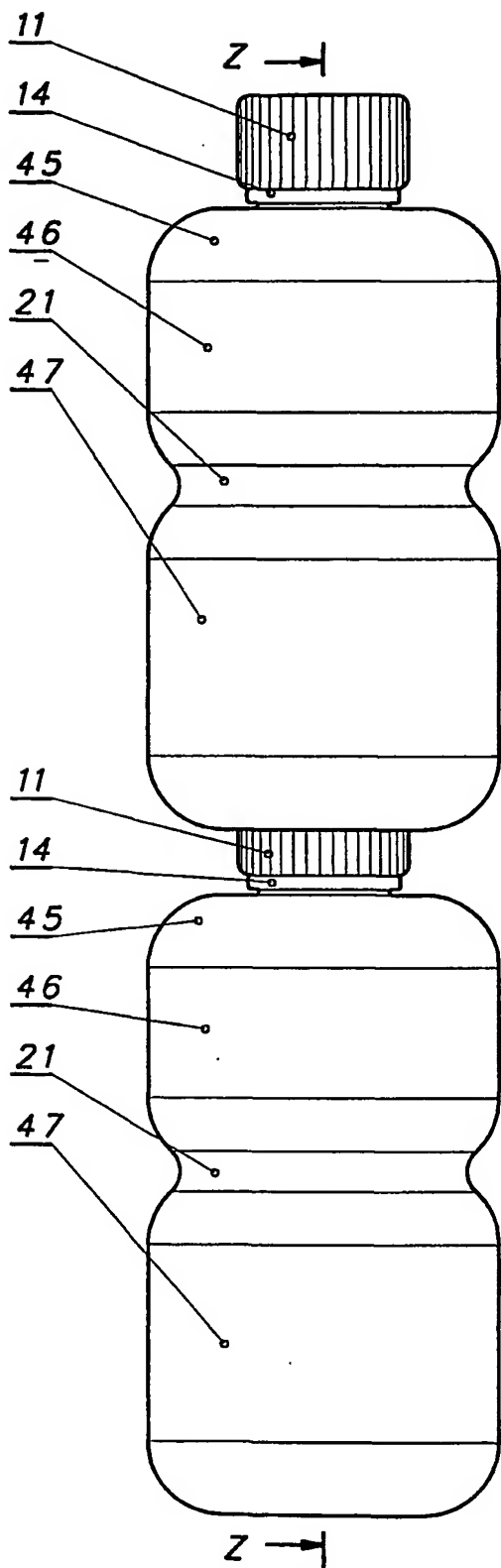


FIG. 66

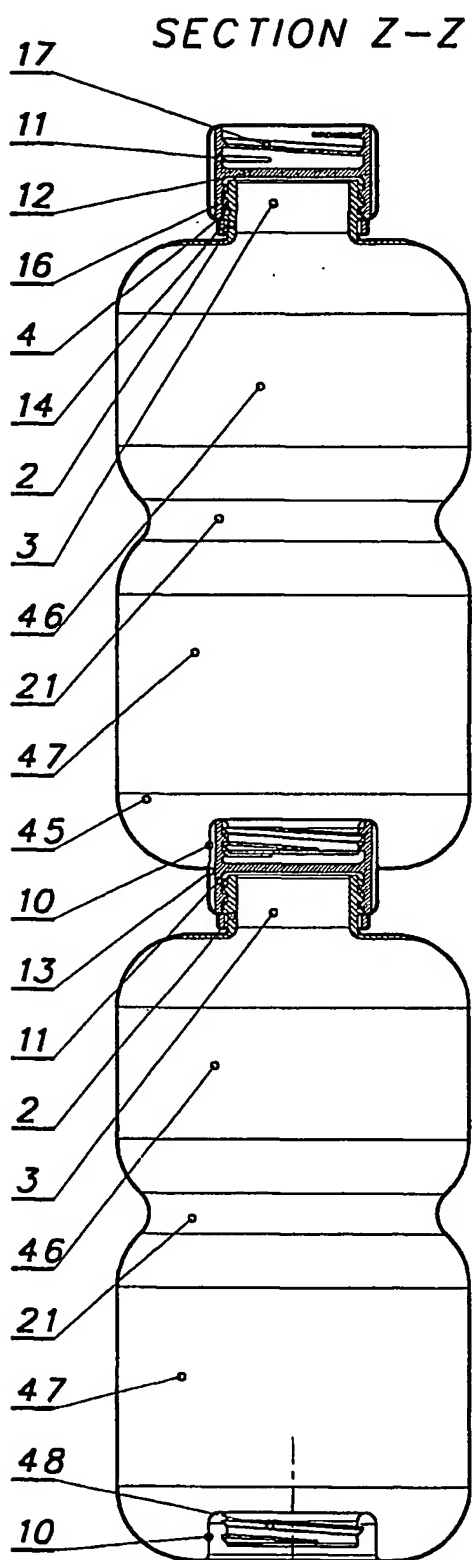


FIG. 67

28 / 31

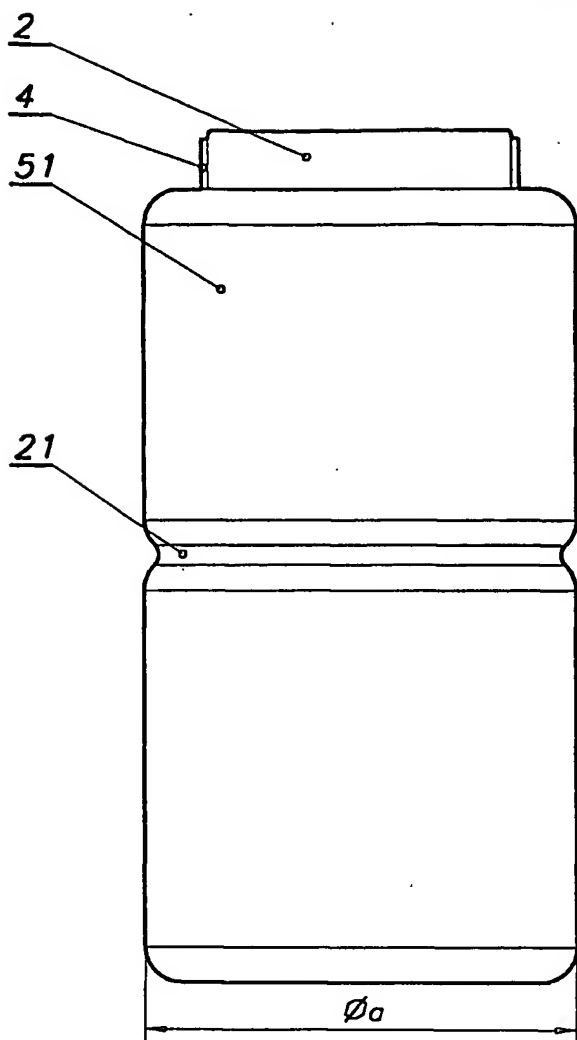


FIG. 68

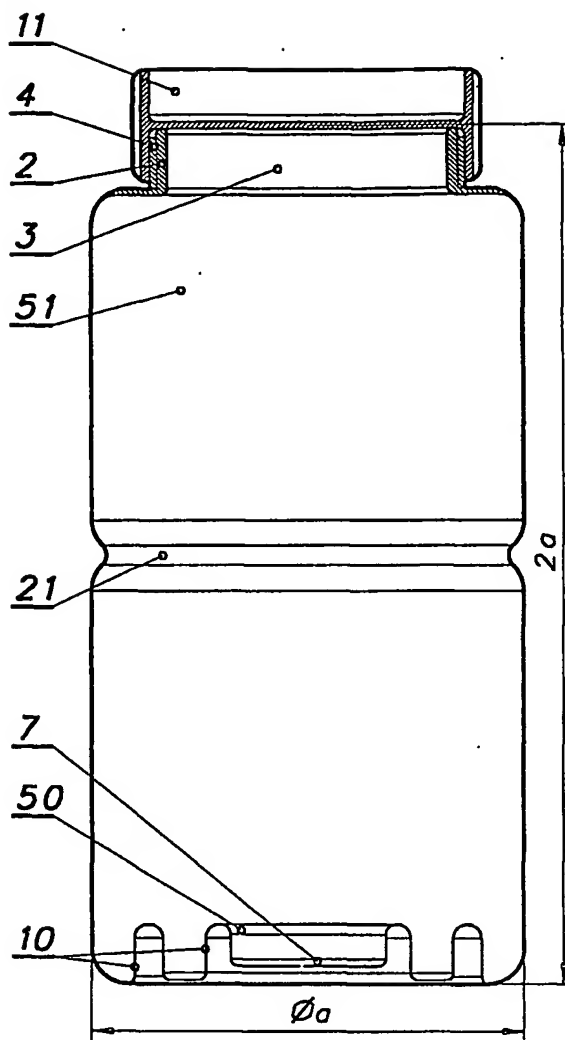


FIG. 70

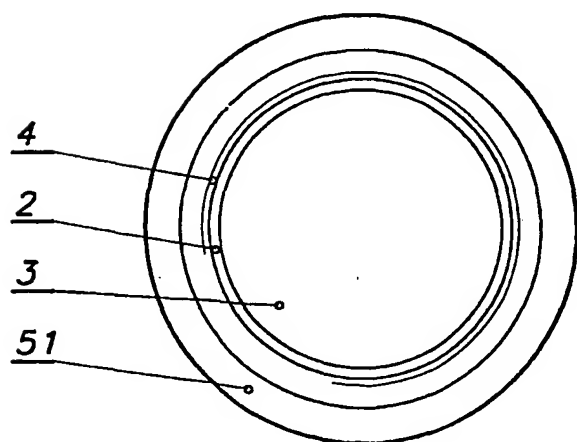


FIG. 69

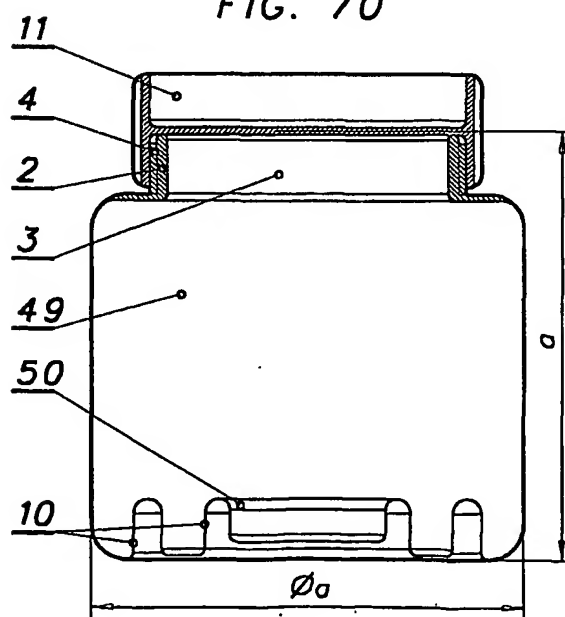


FIG. 71

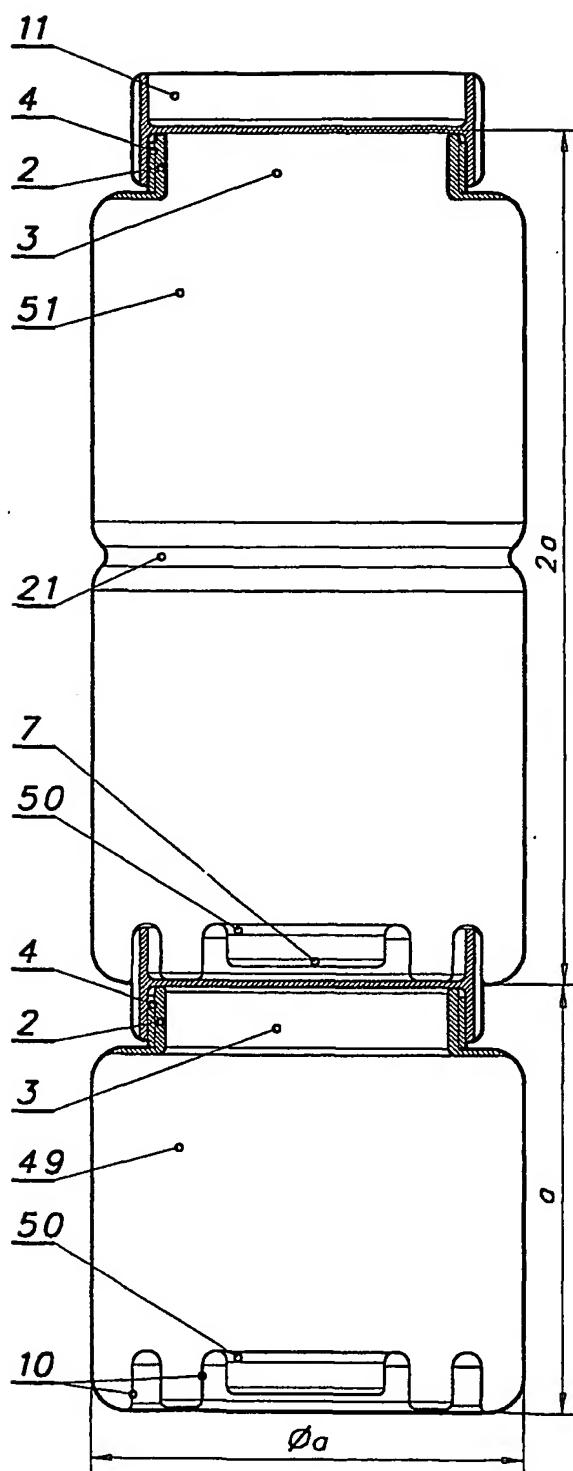


FIG. 72

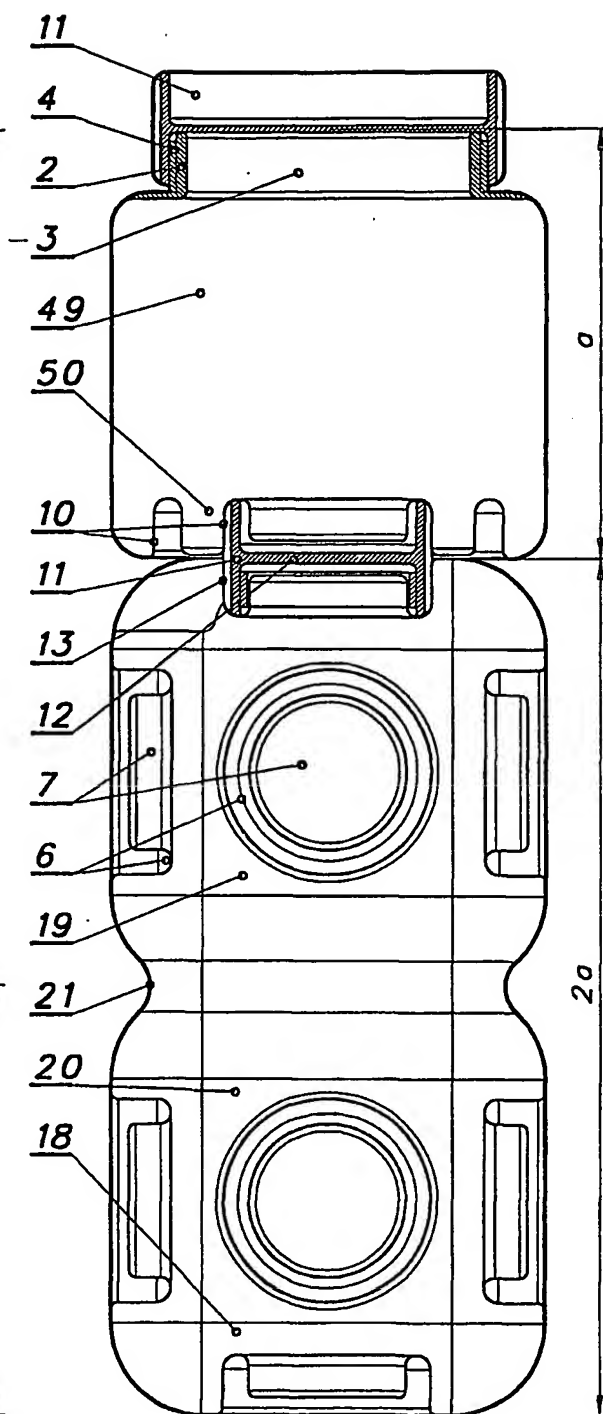


FIG. 73

30 / 31

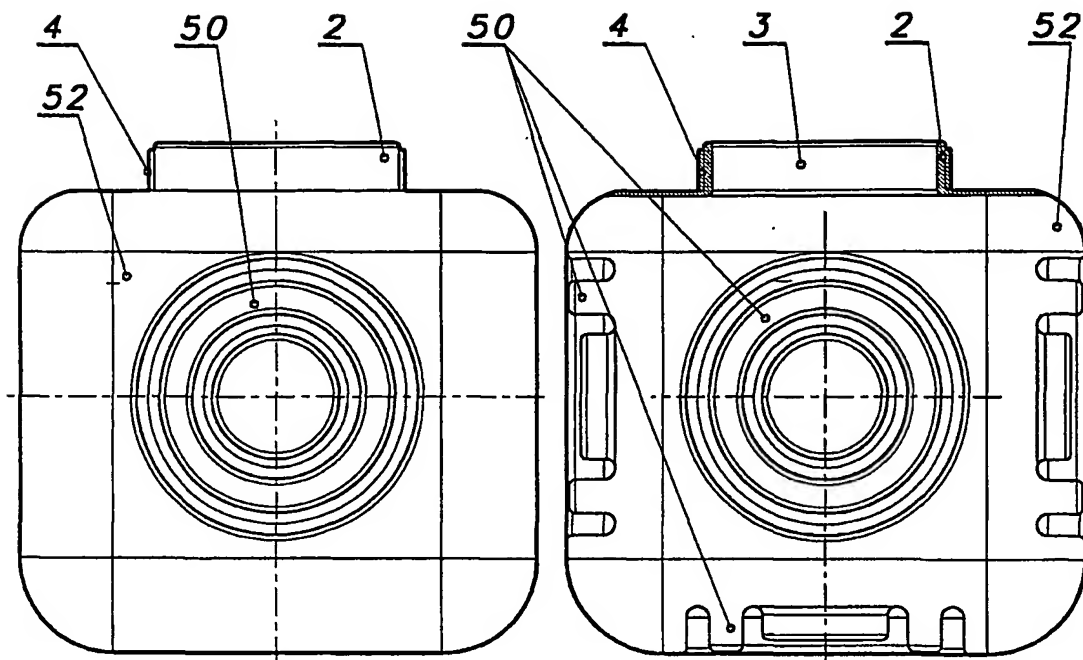


FIG. 74

FIG. 76

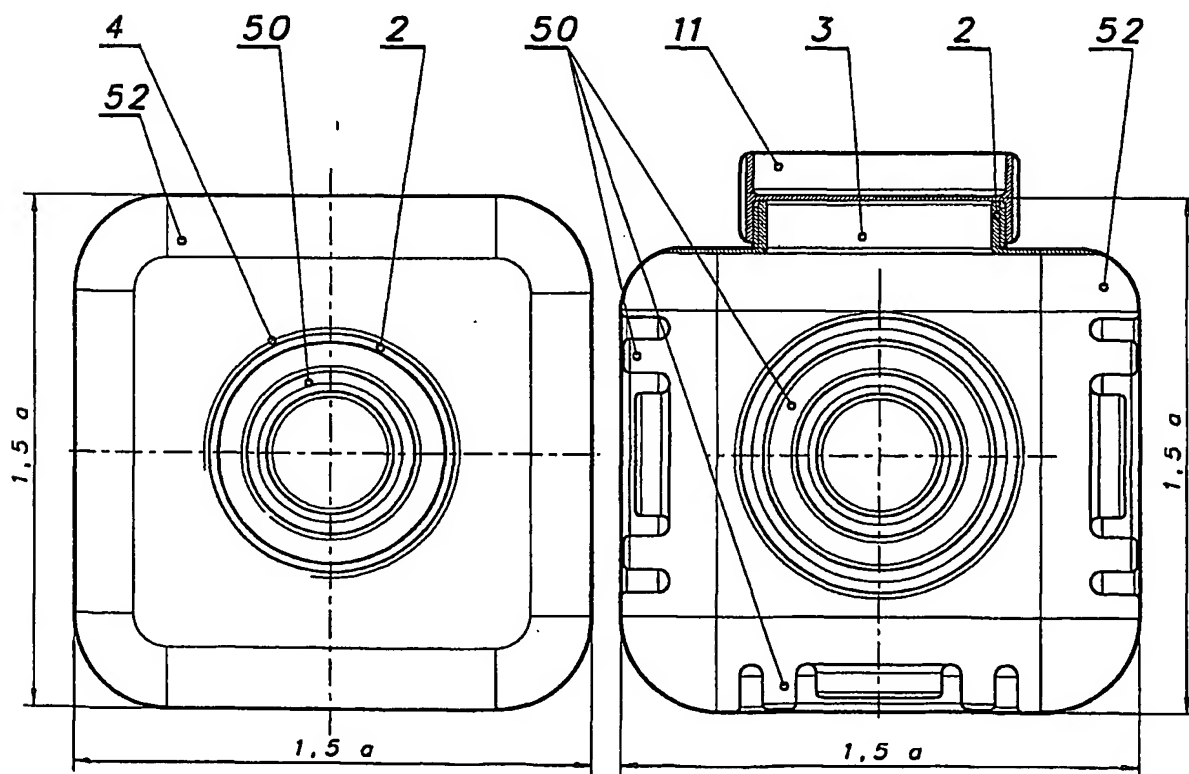


FIG. 75

FIG. 77

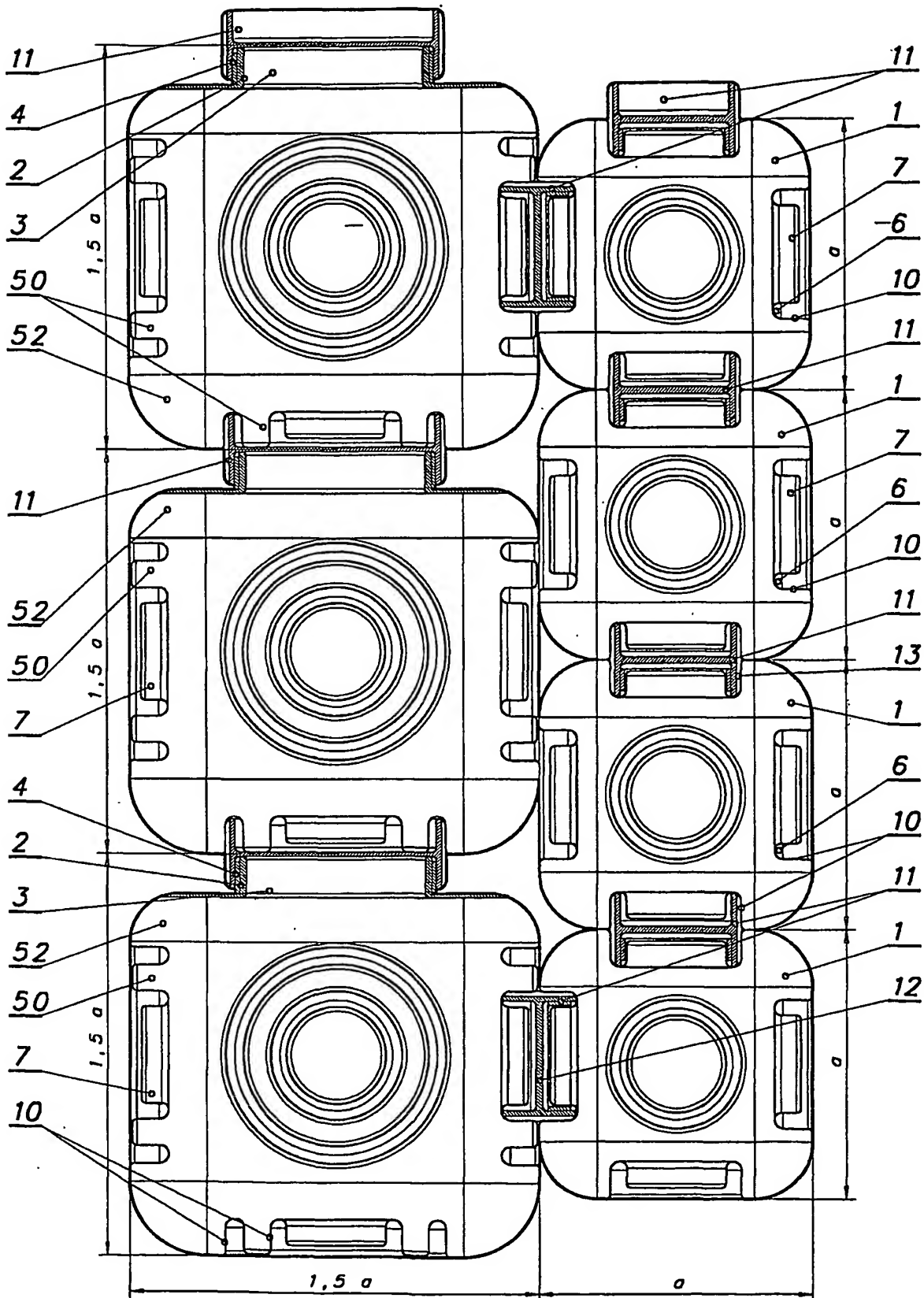


FIG. 78

INTERNATIONAL SEARCH REPORT

International Application No

PCT/HR 00/00001

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B65D81/36 B65D1/42

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 73 17 714 U (MOENIG) 20 September 1973 (1973-09-20)	1-3, 6
Y	page 2, line 26 - line 33; figure 3	7
X	DE 70 12 684 U (POSORSKI) 16 July 1970 (1970-07-16)	1, 5, 6
	page 3, line 15 -page 4, line 9; figure 2	
X	US 5 379 909 A (ROARK) 10 January 1995 (1995-01-10)	1, 4, 6
	figure 2	
X	WO 98 03413 A (FREANI ET AL) 29 January 1998 (1998-01-29)	1, 6
	page 4, line 14 -page 7, line 33; figures 1, 5, 6	
	--- -/-	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

15 August 2000

Date of mailing of the international search report

29/08/2000

Name and mailing address of the ISA

European Patent Office, P.B. 6818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Newell, P

INTERNATIONAL SEARCH REPORT

International Application No

PCT/HR 00/00001

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 857 664 A (FASCI) 12 August 1998 (1998-08-12) figures	5
A	FR 2 610 900 A (BAROI) 19 August 1988 (1988-08-19) claims; figures	5
Y	EP 0 751 079 A (PROCTER & GAMBLE) 2 January 1997 (1997-01-02) the whole document	7

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/HR 00/00001

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 7317714	U	20-09-1973	NONE	
DE 7012684	U	16-07-1970	NONE	
US 5379909	A	10-01-1995	NONE	
WO 9803413	A	29-01-1998	FR 2751620 A AU 3775597 A EP 0932562 A	30-01-1998 10-02-1998 04-08-1999
EP 857664	A	12-08-1998	AU 5298598 A BR 7800334 U CA 2228656 A JP 11001233 A	20-08-1998 06-04-1999 07-08-1998 06-01-1999
FR 2610900	A	19-08-1988	AT 75689 T AU 1221088 A BR 8805404 A CA 1316876 A WO 8806132 A DE 3870747 A EP 0301049 A ES 2008975 A GR 88100080 A,B JP 1502258 T JP 4036937 B US 5007551 A	15-05-1992 14-09-1988 15-08-1989 27-04-1993 25-08-1988 11-06-1992 01-02-1989 16-08-1989 16-12-1988 10-08-1989 17-06-1992 16-04-1991
EP 751079	A	02-01-1997	JP 11508859 T WO 9702185 A	03-08-1999 23-01-1997